The Builder.

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Notes in New York.

THE impression of New York which may be regarded as that which is popular in England is that it is an up-to-date business town with a number of very high buildings. The Englishman who has not seen it, and many who have, are not likely to have endeavoured to formulate the idea of the characteristics of what may be probably considered as the most remarkable city in the world. For there is no other town so full of vitality, which expresses so plainly the characteristics of the people who live in it, which reflects their nature so vividly. It represents energy, growth, youth, and a successful endeavour to unite utility and beauty. Yet it is full of contrasts; it has probably the most complete system of street communication in the world, while in some places it can show roadways which in badness of construction and in filth would not be tolerated by the most retrograde of local bodies in England. Its dwelling-houses are models of comfort and quiet, but the nervous system of its inmates is racked by street noises. Its hotels are palaces, the visitors in which are distracted by an overhead railway, which has made hundreds of rooms uninhabitable, and cabs being scarce they have to seek a seat in a street tramcar, if they wish to go down town. In such a city there is a natural tendency for those who are accustomed to European cities to find fault: the Englishman, who expects to have a hansom always ready to receive him in London, dwells upon some small discomfort; often neither the inhabitant of the Old or the New World is inclined to do their different countries justice.

It is, of course, the enormous masses of buildings, towering into the sky, which have already made Broadway more like a cañon in the Rockies than a street, which are the most obvious outward characteristic of New York. They are out of proportion to the width of the street, but they are at once a bold and a successful endeavour to solve the difficulty of space. There is no European community which would, to use a popular expression, have taken the bull by the horns in this way. New York, confined on Manhattan Island, pressed in by the Hudson and the East rivers, has many times multiplied its area by the simple expedient of going upwards instead of outwards. It is obvious that, whether we like it or not, the cities of the Old World—more especially those of England—will have, in perhaps a somewhat modified form, to make use of this kind of building, though the wholesale way in which it is being carried out in New York would never have been possible in an Old World city. It is a building policy which is not being carried out in any half-hearted or spasmodic manner; gradually, but quickly, New York is, especially in the business portions, being converted into a city of towers.

The effect will presently be stupendous. There will be no other city like it in the world. It is all very well for passers-by to say that buildings of such a size are monstrosities, but seeing that utility is the first object of every building, it has to be admitted that the people of New York have by their system of building policy obtained not only space, but actually buildings in comfort and convenience up to the highest standard. A system of elevators constantly at work entirely minimises the height, and thus movement, whether among offices or hotels, is easier and less fatiguing than in many a city covered by smaller buildings.

In the New Empire buildings, about twenty stories high, for example, at the lower end of Broadway, there is a complete series of elevators ready, some express, and some ordinary; the express not stopping until they reach the eleventh floor. To these must be added the advantages of a telephonic system so much in use all over the United States that communication between different points in a city, is rendered as easy as between two persons in the same room. This fact necessarily prevents the amount of movement which occurs in business offices in England. If a man can transact business from his desk it is unnecessary to move from his chair. Messengers are not required. Thus, whilst movement is diminished by the use of the telephone, it is made easy, when necessary, by the system of elevators.

Eager, however, as New York is to make the most of space, in no city is a stronger desire shown to erect buildings which shall be pleasing to look upon. This is more apparent in such buildings as hotels or private houses than in the blocks of offices, but it is a noticeable characteristic of the building progress of New York. This is not surprising: the educated American sets a higher value on art than does the average Englishman or, indeed, a citizen of any other country except France. In temperament also he has more of the feeling for art than has the less nervously organised Englishman. It is chiefly in buildings that this feeling and desire can at present be best expressed. Any such expression must often be ineffective. But there can be no doubt that it is beyond the Atlantic that we shall find the finest buildings of the future. Energy, wealth, and a desire to produce structures which shall be at once useful and beautiful—large spaces, so far as cities outside New York are concerned—all these things make towards the creation of finer architectural works than can be erected in an older country. Architectural individuality in New York is moreover given a very large field, a scope which is noticeable especially in regard to private houses. This freedom, though it necessarily from time to time must result in eccentricity, yet affords opportunity for much larger artistic effect than can be obtained in the more formal and systematic streets of English and Continental towns. Sometimes also the contrast between the opposing styles of houses which are side by side, the conflict between different materials—a red brick, for instance, side by side with yellow stone—does not tend to general harmony of effect. On the other hand, the obvious and often successful endeavour to create an individual house, pleasing to look upon—not one portion, as in England, of a monotonous street—is remarkable. There is no part of New York where these features of the city are more noticeable than in the Riverside Park overlooking the broad waters of the Hudson, one of the finest residential sites which can be found on either side of the Atlantic. Each house that is placed on this position differs from its neighbour; each owner has endeavoured to make his house worthy of the site. The styles of every part of the old world have been called on to contribute—Flemish towers, Renaissance ornament, the sober red brick and white facings of the English country house. And whether the

result be pleasing or not to an observer, it is impossible that he should fail to be struck with the strenuous effort, not made here and there, but generally, to erect houses which shall be at once comfortable internally and pleasing externally.

New York is thus at the present moment probably the most interesting and instructive modern architectural study: each year sees some new building finished or begun. On the high ground to the north and east of Riverside Park is the new home of the Columbia University, a series of detached buildings, sober and academic in character. The disused Croton reservoir in the upper part of Fifth Avenue is about to give place to a building of quite a different kind. There are now three important libraries in New York: the Mercantile, which was completed in 1891 and occupies the site of the old Opera House; the Astor Library, which, as its name implies, was founded by one of the Astor family—John Jacob Astor—and the Lenox Library, which was built and endowed by Mr. James Lenox, and the erection of which was completed in 1877. These three libraries, each of no mean value, are to be concentrated in a single building, which will occupy the site referred to, and will undoubtedly be one of the most important institutions of the kind in existence. The proposed change exemplifies the characteristics to which allusion has been made. Each of the three libraries is a modern building, but there is no hesitation in reorganising them and erecting for them a building of the first importance. This project, as well as the completion, a few years ago, of the fine public library at Boston, is noteworthy from another point of view—there is in the United States no begrudging of money for buildings of what may be called a non-utilitarian character. It is one favourable trait in the American people that their desire to have complete buildings is so Catholic.

These are but examples of the constant movement and change which is transforming New York. The spirit which builds a western town of wooden shanties on a spot which but very lately before was a pine forest, is equally at work here under different and more interesting conditions. No people are more sensitive to the opinion of the world than are Americans, and it is in the improvement of New York that this desire to create something which will add to the credit of their country is very clearly shown. The effect of European travel is also obvious: the Englishman will visit any number of Flemish or Italian buildings and return unmoved to vote against the local representatives in his District Council who would spend money on dignified public offices. The American recrosses the sea with the intention, so far as possible, of transferring the great buildings of Europe to his own soil. The capital at Albany, completed but a few years ago is, perhaps, the most striking instance of this character. But hotel proprietors even advert to the architectural style of their house as an attraction. No house in New York stands higher than "Holland House" in Fifth-avenue. The first sentence of the advertisement of it which is distributed widely is not in regard to its cuisine or its charges, but refers to its appearance, "without exception the imposing façade of Holland House is the finest piece of architectural doorwork in New York." Internally various rooms and details are copies of those at Holland House in London, and the back of the hotel book has an excellent reproduction of the historical mansion at Kensington. Taken by itself a thing of this sort would mean nothing, but it is one of a number of facts all tending to show the value which is set on architectural beauty, and the honest and general desire which is noticeable to make the buildings of the country really worthy of a great nation. No characteristic could be more hopeful for the future of the country, or a greater sign of the vitality and the educated energy so conspicuous in those parts of the Republic where the climate is suitable to men of European origin.

THE ARCHITECTURAL ASSOCIATION SKETCH-BOOK.

THE Architectural Association Sketch-Book commences, with its latest issue, the third volume of its third series, so that it is now a tolerably ancient institution, and it is satisfactory to find this repertory of architectural illustration still as noteworthy as ever for the interest and variety of the subjects treated, and the general excellence of the drawings.

Of the seventy-two plates of this volume, forty-seven are occupied with subjects in Great Britain, a proportion which indicates a recognition of the value, sometimes underrated by sketchers, of our native work. Not a single sketch, by the way, comes from Ireland, a fact which may form the basis of a new complaint against the Saxon on the part of "virtue and Erin." Though the sister island presents glorious subjects for the landscape painter, it may be admitted that objects of architectural (as distinguished from merely archæological) interest are comparatively limited there, and the most prominent of the mediæval buildings have been restored to a cruel extent; still, it might be worth while for an A.A. sketch book contributor, desirous of breaking new ground, to try for another volume what of interest he could find in Ireland. There is Muckross, at all events, still unrestored.

Considering the manifest decline in the practice of revived Gothic, the Gothic element keeps its proportions in the Sketch-Book more than one would have expected; in fact, there seems to be rather a larger proportion of measured Gothic work than, if our memory serves us right, in some previous volumes. The first two parts contain three elaborate pages of measured Gothic work; the plan of the Ramryge chantry at St. Alban's (Mr. de Gruchy), the Booth Porch at Hereford Cathedral (Mr. Inglis), and the elevation of the Ramryge chantry, the latter a very careful and elaborate piece of geometrical drawing. Such a work, so complete and symmetrical in its elaboration, was well worth commemorating in a collection of drawings, even if most of us have given up the desire to reproduce Gothic; and at all events it is a suggestion in design which may be treated in other methods of detail. Still, in all these drawings of mediæval work while the style was still a complete style, one knows pretty well what to expect; the unexpected, though perhaps less valuable as a model, is more interesting at the moment. We come on the unexpected in the first plate, screen at Plougasnou church, Brittany (Mr. C. C. Brewer), which might be taken for one of the curious mixtures of Classic and Gothic detail favoured by the new school in English architecture. The gate of the screen, with simple straight bars of picturesque arrangement, is crowned by a crocketted canopy with a finial in the centre such as usually terminates a late mediæval bench-end, and flanked on each side by a column, octagonal below and spiral in the upper portion, with a ball for a finial; a singular combination, apparently all of the same date. The stalls and gates below this, on the same plate and from the same church, form also a most characteristic example of picturesque effect in the use of very simple details. Part 3 introduces us to another characteristic and original piece of work, of very different type, in the staircase from No. 54, Great Marlborough-street (Mr. Heaton Comyn). The peculiarity in this lies in the treatment of the balustrade along the top landing, where the row of spiralised balusters of the ordinary type of the period is interrupted at intervals by the introduction of a miniature Corinthian column, rising higher than the balusters, and with the hand railing ramped to cross the columns. This staircase was well worth illustrating; it is an excellent piece of work of its school. The Marsuppini monument from Santa Croce (Mr. Waring), with its tremendously long swags falling from the centre finial over the shoulders of the two terminal figures on the ends of the cornice, furnishes, with its details, two very interesting plates in the same part.

Mr. C. A. Nicholson's sheet of drawings of the church of S. Maurizio, Milan, is a good example of the class of architectural drawing which is less for show than for use and practical information. He gives a small plan of the church, with an elevation of one bay and a half-section to a larger scale, the drawing being written all over with remarks and explanation, rather too small unfortunately to be read conveniently; that has of course resulted from the reduction of the original drawing to fit the scale of the publication. The plan is one of considerable interest; a long parallelogram with internal buttresses, the larger portion of which is the choir, separated from the short nave portion by a solid screen with an opening in the centre; not a doorway however, as it is over or at the back of the choir altar, which is placed against this screen and not at the further end of the church; the plan gives the impression that the nave and choir are really used as two separate churches, with the altars back to back; there is no note as to this on the drawing. The actual communication between nave and choir is by narrow side openings cut through the buttresses.

To Part 5 Mr. Howley Sim contributes a plan and elevation of the little Pilgrim's Chapel at Houghton-le-dale, with a sheet of mouldings, and Mr. Beresford Pite a powerful pen drawing of the front of the Rathhaus at Münster, which from the style we take to be an old drawing. Mr. C. C. Brewer's full-page drawing of a poppy-head from St. David's Cathedral (of which he furnishes other and more important illustrations) takes one back to the days of the Gothic revival, when poppy-heads were an object of enthusiastic study. The special characteristic of this example is that it includes two shields worked into the foliage, bearing the arms of Robert Tully. Mr. J. A. Swan's line elevation of a traceried window and sedilia from

Temple Balsall Church (in Part 6) also reminds one of the days when the study and drawing-out of traceried windows was one of the great objects of the architectural student. This, which represents Early Decorated tracery of very rich and effective type, is an excellent specimen of clean geometrical drawing of a kind of subject which demands all the care of the draughtsman in setting out the lines of the work; we have seldom seen a cleaner piece of tracery drawing. At first sight it appears that the lines should have been interrupted where the circles in the window touch the fillets of the arches; the fillets appear to be on the same plane; but a reference to the sections of mouldings (which are inconveniently separated from the elevation drawing) gives the explanation, in the curious and unusual section of the main tracery bar, which finishes in front with two fillets at an obtuse angle, leaving a ridge up the middle. In the next plate Mr. Brewer gives another large size drawing of a St. David's poppy-head; good carving but not very good design; it is too naturalistic. The same part contains reproductions of two admirable pencil perspective drawings, one by Mr. Lanchester of the tomb of Ferdinand and Isabella in the Capilla Real at Granada, and one by Mr. Shekleton Balfour of Yatton Church; a model sketch of the kind.

In Part 8 we notice Mr. Chapman's careful elevation of the centre bay of the Banqueting House at Kensington House (exterior); Mr. Howley Sim's measured drawings of Castor Church; and Mr. Brewer's sketches and measurements of the curious stalls at Treguier Church, with the carved figure of the bishop standing so oddly at an angle on the canted top of the stall arm; the solid treatment of the whole of the work, and the fine bold character of the carving on the side, deserve special attention. Among the remaining contents of the book may be mentioned Mr. F. Wass's series of measured drawings of Melrose (five plates); Mr. Swan's elevation of the Skipper's House, Ghent, printed however in an unhealthy greenish tone which we do not like, and the same author's admirable pencil perspective of the arcade under the façade of the Brussels Hôtel de Ville, with the massive carved corbel hanging in the air in the foreground, and the heavy vaulting ribs apparently supported by and springing from it; a piece of trickery in mason-craft which one may not altogether approve, but which is certainly pictorially effective. As a perspective sketch of a difficult subject this is perhaps the best in the collection.

The only coloured prints in the volume are two from Mr. Lanchester's drawings of the pavements, S. Caterina, Siena. One always doubts whether chromolithographs exactly represent the colours of the drawing, but we presume in this case they come pretty near to it, and at all events the plates form an agreeable variety from black and white. Decorative work is not very largely represented otherwise; one of the most important contributions is Mr. Masey's set of drawings of the altar frontal in the National Museum at Florence, to which four plates are devoted. The detail of the Renaissance inlaid chimney-piece in South Kensington Museum, by Mr. Heaton Comyn, is very well rendered, and it is an interesting specimen of Renaissance ornament of a certain class, but we bope it will not find imitators. The Panelled Room at Sizergh Castle, Westmoreland, drawn in two plates by Mr. Clapham, is a valuable illustration of a curious and sumptuous piece of work, which may furnish hints for modern wainscotters. Furniture is not much represented; but Mr. Heywood gives two very good sketches of the lectern at Wells; Mr. Comyn gives measured drawings of the quaint pulpit at St. Nicholas, Deptford, and of a really interesting and elegant veneered cabinet with a mirror, in the Bethnal Green Museum; a piece of eighteenth-century work which, though simple, is remarkable for its finished and artistic character.

We presume that it is with the idea of giving as much interest as possible to each part as issued, that the drawings of various subjects are divided—an elevation in one number and the details of it in another, and so on. This shuffling of the cards, however, greatly increases the difficulty of taking a review of the whole contents, and we should have thought that it was of more interest and more convenient to the subscribers and contributors to receive the books with the subjects properly grouped in the first instance. At all events, it would have saved us a good deal of trouble in making this short analysis of the volume. We hope the "Sketch-book" has still many years of publication before it, and will continue to sustain its high reputation.

NOTES.

New Building Code of New York.

The proposed regulations code now under consideration by the Municipal Assembly of New York undoubtedly exhibits advantages over previous enactments, and for the first time engineering principles obtain proper recognition. With regard to foundations, when no actual test is demanded the sustaining power of various soils is stated as follows:—Soft clay, one ton per square foot; ordinary clay and sand, wet and springing, two tons; loam, clay, and fine sand, firm and dry, three tons; very firm, coarse sand, stiff gravel, and hard clay, four tons. In cases where testing is required it is stipulated that the Commissioner of Buildings shall be represented, and that a record of the results shall be duly lodged in the Departmental offices. Intensity of pressure under footings is to be regulated in accordance with modern practice relative to live loads, and the footings must be designed so as to distribute the load equally and to prevent the establishment of pressure exceeding the safe bearing capacity of the soil, as previously set forth. Unit values, agreeing with recent experimental data, are adopted for ascertaining the safe sustaining power of timber beams, whilst live loads are distinctly specified for floors in buildings of different kinds. Factors of safety, unit stresses for wooden and metallic columns, and wind pressures are all dealt with in a manner according with recent engineering practice. Safe loads on brickwork are now fixed at eight tons per square foot where lime mortar is used, and at fifteen tons in the case of Portland cement mortar. The strength of concrete variously proportioned is duly stated, and there are sections bearing upon the properties of stone, brick, sand, lime, cement, concrete, timber, and metals. Fire-proof buildings and floors are well considered, due provision being made for the incasing of girders and columns. This latter condition is most important, and receives too little attention in this country. Perhaps the least satisfactory part of the code is that having reference to cast-iron columns, and the section regulating the thickness of brickwork in skeleton buildings will hardly meet with approval by engineers in the United States. Taken as a whole, however, the new code should prove of benefit both to the public and to all persons concerned in building operations. The conditions laid down may be stringent, but it is a merit that they are clear, and will always be available for guidance. English building regulations no doubt provide sufficient safeguards in most essential matters, but they are adumbrative rather than definitive. Interpretation rests largely with the officials of various public bodies, and in a large district such as London, for instance, uniformity in this respect is unattainable. Increased stringency, if accompanied by exact data, would be less inconvenient than uncertainty, and we think the example about to be set by New York is one which might well be followed.

Coast Defence Works.

In announcing the death of Mr. Case, C.E., Expenditor of Romney Marsh, commemorated in our obituary column last week, some of our daily contemporaries gave evidence that they were not completely familiar with all the results attained by marine engineers in the past. Otherwise they would scarcely have ascribed to Mr. Case, as they apparently did, the introduction of a system of groyning which is spoken of as if it included principles previously unknown, or practice hitherto unattempted. We do not for a moment wish to undervalue the great usefulness of the work performed by this gentleman, and of which we have already expressed our unqualified appreciation. In referring to the point at all we are acting in the interests of exact differentiation as applied to a technical subject. The subject of sea-coast protection is one which has engaged the attention of many intelligent engineers in all countries which are bordered by the sea, and it may safely be said that very little remains to be learnt with regard to the particular department of engineering involved. Nevertheless, there are still divergencies of opinion amongst experts, and the essential feature for which the work of Mr. Case has been justly praised is that known facts were wisely and discriminately applied. Entering upon his duties as Expenditor when defensive works, handed down from a less enlighted age, had been alternately patched up and neglected for many generations, Mr. Case correctly realised the causes of failure and prescribed the suitable remedy. Bearing in mind the fact that his previous career had not been one tending to constitute him a specialist in marine engineering, the successful solution of a long-standing difficulty was all the more creditable. Romney Marsh, formerly almost in danger of re-absorption by the sea, is to-day secure. The sea-wall, extending for a distance of four miles, protects upwards of 60,000 acres of land, lying from 4 ft. to 10 ft. below the level of an ordinary spring tide. The structure has been repaired, and shielded from the waves by the gradual gathering of sand and shingle induced by the judicious placing of groynes at its foot. In the work successfully accomplished by Mr. Case, the

forces of nature have been utilised rather than opposed, and this is the secret of all true engineering.

The Chadwell "Spring."

As an indication of the enormous amount of water abstracted from the chalk in certain parts of Hertfordshire, it may be stated that the Chadwell spring, the ancient source of the New River, has not only ceased to flow, but the water level is some feet down in the chalk. Sir John Evans, writing to the *Times*, says that the New River Company have again this year had to form a dam to prevent the absorption of the River Lea by the Swallow hole that now exists in the place where the spring ought to be. We need not assume from this, however, that the chalk is ceasing to be a water-bearing formation at that point, for whilst it is perfectly possible that continuous pumping may so decrease the water-level as to prevent the flow of the water to the surface, that is no indication of what its effect might be when the larger body of water below the spring level is tapped. Indeed, the water company apparently think so little of the failure of the spring in its bearing on the general question, that even at this moment they are sinking a new 5 ft. well close to their Amwell Marsh pumping station. Sir John Evans states that the Emma spring, another source of the New River, has also ceased to flow, and the water-courses round Amwell are laid dry. That may be so, but it has very little influence on the question as to the existence of enormous quantities of untapped water in the chalk below the surface level. The circumstance that the Chadwell spring ceased to flow a month earlier than it did last year may be due to last year's drought, and after the experience of this summer also, it will, no doubt, cease much earlier next year.

Wireless Telegraphy.

During the British Association week at Dover an accidental and striking development of wireless telegraphy took place. The signals sent from Wimereux in France to the Maison Dieu Hall at Dover were not only received there but also at a station at Chelmsford which has been recently set up to correspond with one at Harwich. Since then communication has been kept up between Chelmsford and Wimereux. The distance as the crow flies is nearly ninety miles, so it is no wonder that electricians are already speculating about future developments. Many thought, eighteen months ago, that Signor Marconi would not be able to increase by much the sixteen miles which he accomplished between Alum Bay and Bournemouth. Yet now this distance has been increased to ninety miles without making the mast much higher, and it seems probable that this is by no means the limit. New difficulties arise with this increased distance. Every signal sent from Chelmsford to Wimereux or *vice versâ* is received at the various stations on the South-East coast and on the East Goodwin Lightship, the various stations not wanted having to ignore the message. This, of course, is a serious drawback, and, if the distance is to be much increased, will make the system practically unworkable. A great deal of thought has been expended in trying to get over this difficulty, and the various experimental methods devised by Hertz of reflecting, refracting, and polarising these vibrations have all been suggested, but have hitherto given unsatisfactory results on trial. Still, this recent achievement will doubtless stimulate further experiments in this direction. At the present moment, as Dr. Fleming points out, communication could be kept up by this method between Holyhead and Dublin, or between Liverpool and Douglas. He also rightly calls attention to the want of enterprise on the part of the authorities in not making further use of this system for connecting lighthouses and lightships with the shore.

Royal Technical College, Berlin.

The Royal Technical College at Berlin will celebrate the hundredth anniversary of its formation on October 18 to 21; and the ceremonies in connexion with this event will be of considerable importance. Among other incidents which will probably mark this anniversary will be the creation of a Doctor's degree in technical science. We understand that the creation of this degree is due to the personal efforts of the Emperor, who has long recognised the importance of encouraging technical science and offering some diploma which will be outside anything that is in the form of an examination as generally understood. Funds have also been collected with the view of arranging special scholarships, to which the city of Berlin and the great employers of labour have largely contributed. There will also be a gathering of the old students of the college, among whom may be counted the most distinguished men that Germany can show at the present moment. It is further proposed to commemorate the occasion by the erection of a monument.

Chicago Colosseum Collapse.

Of all mishaps the most annoying are those occurring towards the completion of any task or undertaking, when the work of days or months, as the case may be, is undone by the neglect of necessary precautions. If, as unfortunately happened at Chicago, serious loss of life and bodily injury are also involved, annoyance must give place to regret, and in some instances to self-reproach, on the part of those responsible. The Chicago Colosseum, which suffered complete wreck in August, was to be a framed steel building 304 ft. long by 172 ft. wide and 85 ft. high. Before the disaster, the work had been advanced as far as the erection of the roof arches, twelve in number. Each of these was a three-hinged steel truss having a span of 150 ft., spaced about 23 ft. apart and resting on concrete. Owing, as the coroner's jury considered, to "gross carelessness," the whole of the steel-work suddenly collapsed like a pack of cards, causing the instant death of ten persons and serious injury to a much larger number. A similar accident occurred to another Colosseum building in Chicago during 1895, and singularly enough in the same month of the year. There have been other failures clearly attributable to inadequacy of bracing and of temporary works, and quite recently an example was reported from the West of England, though fortunately unattended by fatal results. Occurrences such as these point to the inference that in calculations affecting temporary struts, ties, and the like, some important factor is often insufficiently appreciated, as it can hardly be believed that any question of mere cost would ever be allowed to outweigh proper consideration of safety. At Chicago the whole matter has now been referred to another tribunal for further investigation, and the exact causes of the disaster may therefore be identified in due course.

St. Michael's, Bassishaw.

This church, situated in Basinghall-street, behind the Guildhall, is in the hands of the destroyer *i.e.*, it is being pulled down, and the parish is to be united to that of St. Lawrence, Jewry. The original church is believed to have been founded in 1140. In 1666 it was destroyed in the Great Fire, and in 1676 was rebuilt as it now stands from the designs of Sir Christopher Wren. Owing to settlements the church has been pronounced unsafe; the eastern end is out of the perpendicular, and the north wall bulges considerably. Architecturally, the church is of considerable interest, or, we should rather say, was, as it is at the present moment being dismantled of its beautiful interior adornments. The interior is decorated with remarkable plaster work, a very fine ceiling, not yet touched, and a panel of the Royal Arms, together with those of the City (this panel, we are glad to hear, is to be removed to the Guildhall Museum). The columns supporting the nave roof are balks of timber lathe-and-plastered, with plaster cast capitals, and a plaster cornice. In the tower there are remains of the old church before the fire, that were cased in by the work of Sir Christopher Wren, and a fourteenth century stoop has also been discovered and removed to the Museum. Altogether, there is a historical building being lost to future generations. We hope that the Corporation of London will see to it that no ugly or mean building is allowed to take its place.

The Guildhall, Exeter.

A correspondent, who ought to be well informed, writes that the Exeter City Council decided last week to "thoroughly restore" the interesting and picturesque ancient Guildhall, under the superintendence of the City Engineer. This is a most alarming statement. Even if the intention were only to thoroughly repair the building where necessary, in a practical sense, it is not safe to leave that to an engineer who probably has no knowledge of architectural detail and regards such a matter simply as a question of structure; and if anything more than mere repair is contemplated the case becomes still worse. The Exeter Guildhall is an ancient building of quite exceptional interest. If anything is to be done to it the matter ought to be put into the hands of some one who is an artist and archæologist, and not only a constructor The City Council are custodians for the public of a building like that, and the responsibility rests with them to see that nothing is done to spoil it.

Aske's Schools, Hoxton, and a New Technical Institute.

In the course of the current month, the London County Council will open their new technical institute, for which they have adapted the Aske School buildings, bought from the Haberdashers' Company for 23,000*l.* The Council, besides repairing and remodelling the premises, have expended about 3,500*l.* in equipping them with new workshops. To the new technical school will be transferred classes from the Shoreditch Municipal Technical school. The pupils will be taught wood-carving, cabinet-making, carpentry and joinery, plumbing, and

so on, and it is intended to open classes for instruction in laundry work, housewifery, and cookery. The present buildings were erected in 1824-6, after D. R. Roper's plans and designs, upon the site, in part, of the original school for boys and the freemen's hospital founded in 1688 by Robert Aske, who gave the Haberdashers' Company 30,000*l.* as an endowment, which nearly twenty years ago yielded a gross income of about 8,400*l.* Those premises, having a frontage of 400 ft. with a covered walk or piazza 340 ft. long between the two end pavilions, were built for the Company (at a cost, Hatton says, of 12,000*l.*) by Robert Hooke, the mathematician. A wooden model of them is preserved at Haberdashers' Hall, in Gresham-street. Mr. S. Prout Newcome has presented to the Council's Technical Education Board, for purposes of this institute, his natural history collection, valued at more than 25,000*l.* In July last the London County Council agreed to expend 1,450*l.* in laying out the large open space along Pitfield-street, in front of the schools, as a garden for public recreation and resort.

The Land Registry, Lincoln's Inn-fields.

In pursuance of an Order in Council, made under the provisions of the Land Transfer Acts, 1875 and 1897, the area (in the County of London) within which the system of land transfer by registration of title is to be established is extended, as from the first day of this month, to include all London lying north of the Thames—the City and North Woolwich being for the present excepted. Registration applies to all ordinary sales of freeholds and of leaseholds having forty or more years to run, or two or more lives still to fall in, and to grants of leases or under-leases for the same periods, a lease and a reversionary lease being deemed, in most cases, to create one continuous term, but it does not apply to a lease created for purposes of mortgage, or that contains an absolute prohibition against alienation. The mode of registration ordained under the statute is registration with a "possessory title," to be effected on only *primâ facie* evidence, and involves no official investigation. The evidence consists of either (1) a conveyance or assignment on sale or a lease to the applicant, or (2) a statutory declaration by the applicant or his solicitor, setting forth that the former is entitled, with the latest document of title in his possession. The *ad valorem* fee for registration is 1s. 6d. for every 25*l.* in value up to 3*l.* for 1,000*l.*, and then at gradually falling rates to a maximum of 25*l.* for 32,000*l.* and more, and includes the plan, the land certificate, and all other incidental expenses. The land is identified upon the large scale Ordnance map kept at the Registry, and the draft entries for the register are prepared and settled with the applicant in the course of half an hour—an expeditious procedure that might well be followed in other Government offices of enrolment and deposit. In the parishes where the order has hitherto been in operation 1,400 registrations have been made during the past nine months, comprising a large variety of freehold and leasehold properties.

Urban District of Glyncorwg.

Mr. Arnold Royle's Report to the Local Government Board on the sanitary circumstances of the Urban District Council of Glyncorwg, deals with the condition of four villages in the district, viz., Cymmer, Glyncorwg, Abergwynfi, and Blaengwynfi. It is a colliery population. The principal complaint seems to be want of proper provision for excrement removal. In one street in Cymmer, for instance, the houses have their privies placed at the further end of their small gardens, the privy contents being from time to time dug into the gardens. These gardens, it is said, are much too small to continue to receive the excrement dug into them year after year without constituting a serious danger to health, but it can otherwise only be removed by being carried through the houses. At Glyncorwg also, the contents of privies, earth closets, and cesspits are applied as manure to the gardens by the tenants of the houses:—"In some cases, as at the terrace called Pleasant View, the gardens rise at the back to a greater elevation than the roofs of the houses; and as bucket closets are provided, the contents of which are emptied on to the gardens, the heavy rainfall tends to wash the excremental matter down towards the houses, and to the pollution of the soil beneath and around them. . . . In order to remedy this state of affairs there is obviously needed a proper system of thoroughly water-tight sewers, which would relieve the present drains of slop-water, and allow them to deal with rain-water alone; a proper sewerage system would also enable the present difficulty of dealing with the cess-pit and pail contents to be overcome, as water-closets might replace the relatively unsanitary and inconvenient methods of excrement disposal at present in vogue." The Report goes on to suggest various methods of dealing with the sewage of the district, and to state emphatically that whatever method of sewage disposal be eventually determined upon, it is certainly incumbent upon the District Council to materially improve the sanitary condition of their district.

Bell-frames in Towers.

In a letter on church bells in the *Times* the other day, Mr. A. P. Heywood, the President of the Central Council of Church Bell Ringers, after making some comments on the imperfect tuning of church bells, in which we entirely concur with him, complains that bell-ringers have not been successful in inducing architects "to admit the well-established advantages of using the bell-frame as an effective cross-bracing to the tower, instead of leaving it loose on projecting corbels, to batter and spread the walls." Mr. Heywood does not state what the advantages are, nor who has "well-established" them, but we are not surprised to hear that architects are sceptical on the point, and we should think they would continue to be so. The system of keeping the bell-frame as clear as possible of contact with the walls is the one recommended by constructional commonsense and experience; and as to their "battering the walls," that of course is a mere piece of epistolary picturesque; there is no necessity that they should do so.

Modern English Handiwork.

Mr. Montague Fordham has opened a showroom and shop for the exhibition and sale of modern English handiwork in Maddox-street, W. We understand that the place has been opened as an experiment; if at the end of two years it has not been a financial success, it will be given up. Hitherto similar attempts have failed in keeping up the standard of excellence in the work for sale. Mr. Montague Fordham thinks there is enough demand for high-class handicraft work to ensure success to the enterprise. There is certainly enough work being done by individual effort to realise the success, and it will be a great thing for public and craftsman to be brought together in a place where only work executed by competent artists will be admitted. In spite, we may almost say, of the ultra-modern type of many of the exhibits, there is a prevailing tone of common sense and usefulness in the designs and in the workmanlike use of materials. For example, the hanging lamps from the Birmingham Guild of Handicraft are excellent, the simplicity of a silver teapot and some silver jugs is a great advance on most modern silversmiths' work. In this class of work Mr. H. Wilson sends a chalice, and also an altar cross; the former is a beautiful thing, in which every bit of modelling is symbolic. The same artist has a statue of Christ, with outspread arms, a model not yet cast, striking in its simplicity. An interesting object in the present exhibition is the illumination and caligraphy of Mr. W. H. Cowlishaw, who has literally written out a whole translation of Bourdillon's "Aucassin and Nicolette." The whole book is illuminated and written by the artist, and is to be bound by Mr. Cobden-Saunderson. It is hardly likely that there will ever be an extensive demand for written books, but an occasional treatment of a book in this manner is an interesting artistic experiment, and may tend to set a better model for illuminated addresses, in which there is generally at present more show than art. In connexion with books, there are some out-of-print copies of William Morris's works, and some good bindings by Mr. Douglas Cockerell. There is a room full of wood-block colour prints by Mr. F. Morley Fletcher, Mr. Sydney Lee, and Mr. J. D. Batten. Mr. Montague Fordham is selecting precious stones for bead necklaces, which are being designed by Miss May Morris The shop is now permanently open, and there will be special exhibitions there from time to time.

Offering Bribes to Architects.

An architect, writing from Kingston-on-Thames, sends us, with an indignant comment, a circular which has been addressed to him, and presumably to other architects in the neighbourhood, commencing "Having taken over the business situate as above, I beg to inform you that I shall be pleased to allow you a commission of 5 per cent. on all business introduced by you." We hope that all architects in the neighbourhood who have received this circular will refuse any relations with the person who sent it. It is necessary that all members of the profession should act decisively in such a matter, because the mere sending of such a circular is an indication that the author of it believes, at all events, that there are some who will accept his offer.

The New Free John Knox Church, Aberdeen.—The operations in connexion with the erection of the new church for the Free John Knox congregation are approaching completion. The architect of the new building is Mr. George Coutts. The church will be seated for about 1,000 worshippers.

NEW CLOCK TOWER, FYVIE CASTLE.

Fyvie Castle, one of the largest and finest of old Scottish baronial houses, has had several additions made to it by its present proprietor, Mr. A. J. Forbes-Leith. A new clock tower, facing the north side of the quadrangle, is just completed, a sketch of which, by the architect, Mr. A. Marshall Mackenzie, is given here.

The stone employed for the dressings is local freestone of a rich red colour, and the general wall surfaces are rough cast.

The drawing was exhibited at the Royal Academy this year.

LETTER FROM PARIS.

The chief portion of the construction of the chapel in the Rue Goujon, raised to the memory of the victims of the terrible catastrophe of the Charity Bazaar two years ago, is now completed, and very shortly the large cross of stone will be placed on the summit of the dome. The work in the interior is also being rapidly carried on, and on the stonework surrounding the "chemin de la Croix" will be engraved the names of the unfortunate women who perished in the flames. The chapel will in all probability be ready for inauguration on May 4, 1900, the third anniversary of the catastrophe.

The two fine buildings of the Palais des Beaux Arts, on the new avenue in the Champs Elysées, are nearing completion, and it will be shortly necessary to pull down the portico of the old Palais de l'Industrie, which was left for utilitarian purposes, but now masks the front of the new palace. The group representing "La Patrie couronnant l'Industrie et les Arts," by the late sculptor, Elias Robert, now forming a portion of the remains of the Palais de l'Industrie, will be placed on one of the principal buildings in the coming Exhibition; and the two escutcheons, supported by two charming figures of children, due to the chisel of the sculptor Diéboldt, will also be fixed on one of the new buildings. After the Exhibition, these works of sculpture, last souvenirs of the first Universal Exhibition at Paris, will be placed in one of the City Museums.

The once celebrated old prison of Sainte-Pelagie at Paris is now being rapidly demolished, and wide streets will soon take the place of this prison, not less renowned than that of the Bastille. First a sombre convent raised in the seventeenth century by the Comtesse Beauharnais de Miramion as a refuge for women, it was later on transformed into a prison; and it was there, in June, 1793, that Mme. Roland was imprisoned, who, with the Marquis de Pons and the Comte de Laval-Montmorency, left the prison only to meet the guillotine. The chapel, a very good example of seventeenth-century architecture, is still standing; but, after much hesitation, it has been decided to demolish it also.

The foundation-stone of the new palace of the Académie de Médécine was placed in position with a certain ceremony a few days ago. This building will have its façade in the prolongation of the portico of the courtyard of the École des Beaux-Arts in the Rue Bonaparte.

The new Hotel des Téléphones in the Rue Desrenaudes is being arranged by M. Boussard, the architect, with all the improvements which experience has proved to be absolutely necessary for the proper working of an important telephone centre, and the comfort and health of the employees. The telephone centre, specially constructed in view of the coming exhibition, by M. Boussard, is also being rapidly pushed forward on the Avenue de Saxe.

A walk through the immense grounds of the Exhibition is now well worth making; the buildings are now beginning to take the forms they will definitely have, the plasterers are busily covering the framework of wood or iron of which the various buildings are constructed, and in a large number of cases the exterior decoration is being fixed up. The work of the Exhibition is declared to be well in advance on that of the last Exhibition as compared with the date of opening, but there is still a great deal to be done. The authorities have just made known to the various foreign Commissioners the spaces allotted in the interior of the buildings to the exhibitors. The pavilions of foreign Powers on the Quai d'Orsay already present an idea of what the ultimate effect will be; the English Royal Pavilion is still much behindhand, owing to the time necessary for supplying and fixing the immense iron carcase (this being

New Clock Tower, Fyvie Castle, Aberdeenshire.

the only iron building on the Quai d'Orsay), but no doubt the rapidity with which the remaining portion of the work will be carried out will enable the building to shortly compare favourably with its neighbours as regards appearance.

On the Esplanade des Invalides the various works are well advanced; on the Champ de Mars the two immense buildings on the right and left of the central avenue are being most artistically decorated; the Palais d'Electricité and the Château d'Eau are not yet quite completed as regards construction. The Palais du Génie Civil et Moyens de Transport, the architect of which is M. Hermant, is receiving the large panels of the frieze, each panel 30 ft. long and 9 ft. high, to be fixed along the whole length of the building, 550 ft. long. These panels, due to the talent of M. André Allard, sculptor, illustrate the history of the methods of conveyance employed by various peoples in all ages, from the primitive wagon formed of tree trunks to the latest locomitives, automobiles, and balloons. The style of the building is Florentine Renaissance, and M. Allard intends by skilful colouring to produce the impression given by the friezes existing at Florence. The decorative portion is undertaken by M. Déreche, who is carefully harmonising his work with that of the sculptor. The genius of engineering will be represented on the building by life-size figures, personifying all branches of construction, placed between the arches of the façades.

The Commission du Vieux Paris has decided to commemorate the finding of the remains of the old Tour de la Liberté of the Bastille, brought to light during the work of the metropolitain railway. The immense blocks of stone will be placed in a circle on the square on the Boulevard Henri IV. and Rue Morland, and will be surrounded by grass and shrubs, and thus form an interesting souvenir of the Bastille.

The papers announce that a French architect, M. Bénard, has been awarded the first premium in the final competition for the University of California. M. Bénard was born in 1844 at Goderville; he became a pupil of Paccard and of the Ecole des Beaux-Arts, and in 1867 carried off the Grand Prix de Rome. On his return from the Villa Medici he met with no immediate success, though we remember a very fine drawing by him some years ago at the Salon. Two years since he appeared as a candidate for the chair left vacant at the Ecole des Beaux-Arts by the death of Ginain, but in spite of his Grand Prix fame the administration preferred M. Scellier de Gisors, and placed him in the second line. He was, nevertheless, appointed a member of the Jury of the Ecole des Beaux-Arts.

There have been exhibited in the Rue de Lutèce the designs sent in for the eighth annual competition organised by the "Société Internationale des Architectes de France." The subject was an Inn of the future ("Auberge de demain"), with provision for a posting service of bicycles and motor cars, along with all improvements in general arrangement which the competitors might suggest for a modern hotel. With one or two exceptions, the competitors have confined themselves to adding the outbuildings necessary for the special provisions suggested, but without proposing any further innovations.

Generally speaking, however, there is a great move among the French architects of the day towards every kind of improvement in the habitation; and only recently several architects, associating themselves with some of the leading sculptors and painters of the day, have requested the Municipality of Paris to have built next year, under their direction, a model house in the grounds of the Exhibition, in which everything is to be constructed and decorated in the most superior style possible. The Municipality, however, have declined (perhaps wrongly) to take the matter up. At all events a good many artists of the day are giving their attention to designs for industrial art for the Exhibition, which is expected to show in this respect a great advance on the exhibition of 1889. M. Olivier Merson will exhibit cartoons for stained glass; MM. Bigaux, Couty, and Guimard designs for wall-papers; MM. Georges and Henri Caïn, and M. Dubufe, are at work on designs for wall-papers; MM. Pierre Roche, Jourdain, and Sébilleau are designing baldacchinos and decorations for public fêtes; and M. Emile Gallé is preparing designs for cut glass. The artists who are to exhibit in ceramic art are very numerous. Lastly, the sculptors — MM. Injalbert, Puech, and Bourdelle, and MM. Roll, Jambon, and Prouvé among the painters, will exhibit models and cartoons for the decoration of buildings. The initiative in this class of work for the exhibition, it should be added, comes from the Société Nationale des Beaux-Arts (the "New Salon"). The candelabra which M. Gauquié has been designing for the new bridge are not yet ready, but the four allegorical figures of France in different stages of her history are being set up, and M. Dalou is putting the last touch to the lions.

One section of the metropolitan railway, the "4th lot," at the intersection of the Rue de Rivoli and the Boulevard Sévastopol, is finished. This was the most difficult to construct, for at this point the tunnel descends to a considerable depth to pass under the intercepting sewer of the Boulevard Sévastopol, and encounters, moreover, a stretch of the subterranean lake of Paris. The rapid completion of this portion of the work, therefore, promises well for the total completion of the scheme, which the engineer, M. Bienvenu, is directing with so much energy and ability.

COMPETITIONS.

New Public Buildings, Edmonton.—The Edmonton Urban District Council recently invited three architects to prepare designs in competition for new Council chamber, committee rooms, and further offices, to be erected as an addition to the present Town Hall at Edmonton. They also desired the erection, on a large piece of vacant land adjoining, of two swimming baths, a mortuary and post-mortem room, extensive stores, and large ranges of stabling, cart-sheds, &c., all to form a complete set of buildings for the better and more convenient administration of the district. The designs were submitted by the Council to Mr. Wm. Emerson, President of the Institute of Architects, who has placed first that submitted by Mr. W. Gillbee Scott, of London, and the District Council have passed a resolution accepting the assessor's award, and appointing Mr. Scott architect for the work.

Schools, Northampton.—In June last the Northampton School Board invited competition plans from architects practising in the Borough of Northampton for new Board Schools to be erected in Barry-road, Northampton. The whole of the school is to be on the ground floor, with sufficient accommodation for 420 boys, 420 girls, and 540 infants. The boys' and girls' departments are to be provided with a school-room and class-rooms, while the infants' department is to have a central hall and class-rooms, which are to be sufficient to accommodate the whole of the scholars. There were eight competitors and nine plans, as follows, the adjudicator being Mr. T. J. Bailey, Architect to the London School Board:—Messrs. Law and Harris, St. Giles'-square, "Minerva"; Messrs. C. Dorman and Son, Abington-street, "Supervision" and "N.S.B."; Mr. M. H. Holding, "Practical"; Mr. W. Hull, "Education"; Mr. W. Shaw, "Light and Air"; Mr. H. Norman, "Alpha"; Messrs. Mosley & Anderson, "Ideal"; and Mr. F. Dorman, "Through Ventilation." The adjudicator's award is: 1. "Minerva"; 2. "Supervision"; 3. "N.S.B." The designs of "Minerva" show that the boys' and girls' school has been placed in a rectangular building facing the Barry-road, the boys' school being divided from the girls' school by means of a hollow wall, and the infants' school being a separate building facing the road on the south side of the site. The boys' school and the girls' school have a central corridor, with class-rooms on either side, and a school-room at the end. The external elevations will be carried out in pressed sand-faced bricks and Bath stone dressings, and the roofs covered with green slates, while the whole of the internal walls will have glazed brick dados, 4 ft. high, and finished in plaster above. The estimated total cost, including desks and other necessary fittings, is placed at 14,300*l*.

Carpenter's Company Scholarships.—The two scholarships offered by the Carpenters Company in connexion with the building construction classes at King's College, Strand, were competed for on the evening of the 27th ult. at King's College. A larger number of candidates than in former years presented themselves at the examination and the two successful students were Messrs. Francis Hartnoll and Fredk. Jones.

ENGINEERING SOCIETIES.

Society of Engineers.—At a meeting of this Society, held at the Royal United Service Institution, Whitehall, on the 2nd inst., Mr John C. Fell (President) in the chair, a paper was read by Mr. J. Bridges Lee, M.A., on "Photographic Surveying," in which he set out in detail the special advantages of the photographic method. Amongst these advantages are: (1) A more complete and accurate record than can be obtained by any other means; (2) saving of time in the field; (3) ability to take full advantage of short clear interludes in unsettled weather; (4) special advantages for military purposes in an enemy's country; (5) utility for travellers rapidly traversing a country; (6) usefulness for detecting geological and physiographical changes; (7) economy in operation. Mr. Lee then passed in review the various kinds of phototopographic apparatus which had been designed and constructed, pointing out the distinctive features of most of the best known instruments. He stated that spherical projection had been proposed on account of its theoretical advantages, but he pointed out that it had never been brought into use in consequence of practical difficulties. Cylindrical projection had also been proposed and tried, with the result that while fairly satisfactory panoramic views had been obtained, cylindrical projection had not been found suitable in practice for serious survey work. He observed that all the best photographic survey work everywhere had been done with plane projection instruments. It was pointed out that the instruments used for photographic surveying might be exceedingly simple, consisting of nothing more than a good fixed focus box camera and lens with levelling screws and levels and marks inside the box to indicate the termination of the horizon and principal vertical lines. The Canadian surveys, which the author said were among the best, had been effected by the aid of very simple instruments supplemented by theodolites carried separately. On the other hand, instruments might be very complex, like most of the Continental forms, which were really phototheodolites, the camera and theodolite being combined in one instrument. It was pointed out that nearly all photosurveying instruments were designed to be used with the optic axis always horizontal, the Italian military instrument and Koppe's being exceptions to the general rule. The author then explained that until he introduced his improvements in photogrametric apparatus all such instruments, without exception, whether simple or complex, yielded nothing but ordinary photographs, with marginal marks to indicate the terminations of the principal vertical and horizontal lines which had to be ruled in aftewards by hand. The author then described the improvements which had been made by him, and which were designed to facilitate the subsequent interpretation of the photographs. These improvements consist of certain mechanical appliances inside the camera for securing an automatic record on the face of every picture taken of the horizon and principal vertical lines; of the compass bearing of the optic axis or principal plane; of a scale of horizontal angles applicable to all points visible in the picture; and of memoranda of useful information relating to the particular picture. The author then described the method of conducting a photographic survey and of plotting maps from survey photographs.

BOOKS RECEIVED.

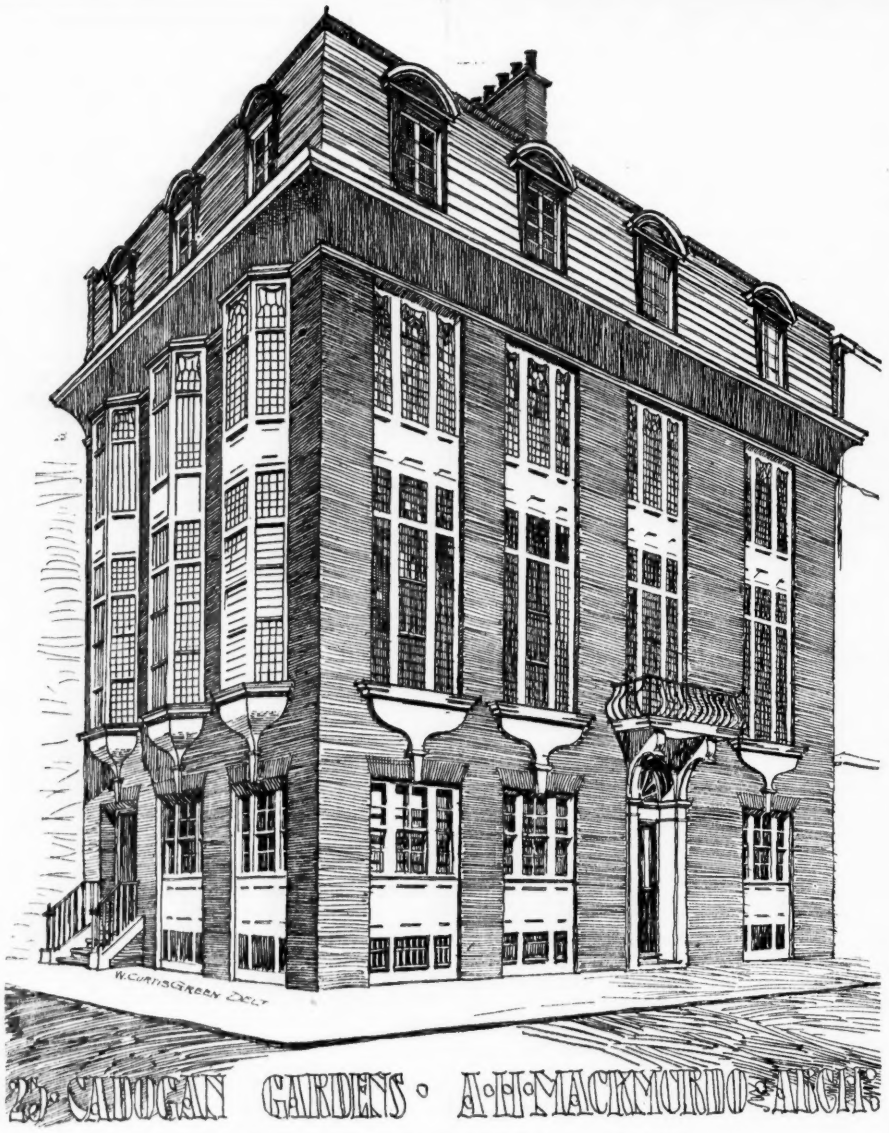
Costruzioni in Calcestruzzo ed in Cemento Armato. By G. Vacchelli. (Milan: Ulrico Hoepli.)

Architectural Hygiene. By Banister F. Fletcher and H. Phillips Fletcher. (D. Fourdrinier; *Builder* Office.)

Quantities and Quantity-Taking. By W. E. Davis. (D. Fourdrinier; *Builder* Office.)

Carpentry and Joinery. By Banister F. Fletcher and H. Phillips Fletcher. Second edition. (D. Fourdrinier; *Builder* Office.)

Hotel, Aviemore, Inverness-shire.—A new hotel is to be erected at Aviemore. The plans of the building provide for one hundred visitors, and include six suites, each containing a double bedroom, dressing-room, sitting-room, bath-room, and private lobby. The building is estimated to cost about 18,000*l*. Messrs. Ross & Macbeth, architects, Inverness, have prepared the plans.



Sketches of London Street Architecture.—XXXIV.

LONDON STREET ARCHITECTURE.—
No. XXXIV.

This is a corner house in Cadogan-gardens, designed by Mr. MacMurdo.

The materials are mainly red brick with a steep slated attic, and stone corbels under the window sills and bays. The woodwork is all painted white.

Books.

Popular County Histories. A History of Oxfordshire. By J. Meade Falkner, Editor of "Murray's Handbook of Oxfordshire." London: Elliot Stock. 1899.

We can imagine no history of Oxfordshire which could entirely fail to attract us. Mr. Falkner, however, leaves nothing to the magnanimity of his reader, whose attention is sustained throughout. Since the chronicles of the county date from the Roman occupation, and these multiply in interest until the period of the Restoration at least, the prominence with which Oxfordshire figures in the great march of events may readily be gathered. It was the scene of encounters between the Mercians and the West Saxons. The capital became a fortified city under the dominion of Richard d'Oily, one of William's numerous barons; it was besieged by Stephen, and again by the Parliamentary forces under Waller; and it was from Oxford that the King, who had during two winters been holding court amid its colleges, fled for Scotland. The University, too, was the centre of those bitter controversies which stirred the Middle Ages. Wyclif, the reformer, was a student of the newly erected Queen's College. The bishops Ridley and Latimer suffered death within the city ditch. Nevertheless, its life as a University city seems to have been disturbed little, and the type of college once established, these foundations followed one another in steady flow. The first was Merton, named after its builder, Walter de Merton, Chancellor to Henry III. Balliol, University, Exeter, Oriel, Queen's, and New Colleges succeeded, and a century later came Lincoln, All Souls, and Magdalen. Jesus, Wadham, and Pembroke were not completed until the beginning of the seventeenth century, and yet, as the author points out, they also remained true to the mediæval traditions of style, although one would naturally have expected to find them frankly classic in their features. Oxford was, of course, eminent as a University prior to the foundation of these colleges, when the students resided in "halls" or houses which they rented themselves, and which bore some name of local significance, such as Elm Hall, Rose Hall, Broadgates Hall, and Glass Hall. The county was early rich in churches, there being some hundred which show traces of Norman or Transitional style, while by the reign of Henry I. there were sixteen in Oxford alone. Among the later examples of architecture, the Abbey Church of Dorchester is conspicuous, unequalled anywhere perhaps in the picturesqueness of its site by the riverside, unless we except Christchurch, with its marshy foreground.

The author does not pretend to treat of these churches, nor of any of those buildings for which both county and city are justly famous, in any detail; and since the book lacks illustrations, this would have been impossible for him to attempt by means of text alone. But in Parker's "Architectural Guide to the Neighbourhood of Oxford" anyone desiring a fuller acquaintance with these churches will find them graphically described. The abbeys, in which the shire was once so abundant, have practically disappeared. There were some four and twenty of these distributed among the various orders, Osney and Eynsham being particularly famous for their splendour; the dissolution and destruction of all, however, were complete. Types of the old manor-houses, into the broad lands of which so much of the ecclesiastical properties was absorbed, are plentifully scattered. A late example—Water-Eaton, by the banks of the Cherwell—is unusually perfect, with its walled courtyard, entrance-gate, and chapel. Although it does not go much into architectural details, to those who would realise the tides of history which have surged upon the grey walls of church and college, we greatly recommend Mr. Falkner's book.

Magnetism and Electricity for Beginners. By H. E. Hadley, B.Sc., A.R.C.Sc. London: Macmillan & Co., Limited. 1899.

This book is written for pupils preparing for the elementary stage of the Science and Art Department's Examination in Magnetism and Electricity. The subject is treated rather more fully than is required for the schedule of that examination, so that it may also prove useful to students preparing for the London matriculation and similar examinations. From the point of view of teachers preparing classes of boys for these examinations the book leaves little to be desired. It is accurate, and the author does not shirk explaining difficulties or illustrating how the laws of electricity can be demonstrated by the most simple apparatus.

The defects of this book are due to the system of examinations of the Science and Art Department. A third of it is devoted to statical electricity; an excellent training peradventure for those who are going to study the higher mathematics of the subject—Laplace's equations or Green's theorem—but utterly out of place in any system of general elementary education in this country.

There are hundreds of boys who have passed the Science and Art Examinations in electricity who think that a dynamo is a kind of frictional machine, and that the sparking at the commutator is where the power is being developed. In Switzerland or Germany this kind of misconception is unknown.

Another defect is that stress is laid on those portions of the subject which will "pay" in examinations. Definitions are too numerous, and interesting matter bearing on the subjects discussed is excluded. Teachers who are paid by results are not likely to complain of this, but it must have a depressing effect on the bright and intelligent boy. We are old-fashioned enough to think that rousing the interest of the boy occasionally is better for him than getting a first-class certificate in a Science and Art Examination. It is too bad of teachers to pretend that passing a Science and Art Examination in electricity will be useful to a boy's future prospects. The touching faith that many boys have in their certificates would be ludicrous if it were not such a serious matter for them.

Elementary Practical Mathematics. Frank Castle, M.I.M.E. London: Macmillan & Co. 1899.

Students belonging to the artisan class frequently fail to profit as they should by technical lectures because their mathematical knowledge is too limited in extent. Classes devoted to pure mathematics do not prove attractive to young handicraftsmen, and an effort has therefore been made to popularise the science of quantity by teaching just so much of pure and applied mathematics as will make concurrent technical instruction intelligible. The syllabus of Practical Mathematics recently issued by the Department of Science and Art is devoted to this object, and at the first examination in May last many candidates were called but few chosen. The reason for this is supposed to have been that the exact scope of the examination was an unknown quantity, and the work compiled by Mr. Castle is intended as a text-book covering the necessary ground. Largely following the arrangement adopted in the published works of Professor Perry, this manual is not particularly original, but it undoubtedly summarises in an excellent manner many branches of mathematics and shows how these may be adapted to the requirements of everyday work. Definitions of various units, methods of measurement, modes of expression, and other explanatory matter, interspersed with demonstrations and exercises, occupy the first four chapters. Following these, some arithmetical methods and their simplification receive attention. Algebra, graphic arithmetic, logarithms, trigonometry, orthographic projection, mensuration, demonstrative mechanics, and the varied uses of squared paper, are all considered, and in a way which must be clear to any person of ordinary intelligence.

Mr. Castle has succeeded, where some mathematicians fail, in concise and lucid expression, and a brief summary is usefully appended to each chapter. Here and there we notice points requiring emendation. For example, the definition of a radian might appear at first sight to be accidentally omitted from page 23, and though it turns up in correct sequence on page 30, it is not correspondingly indexed. Again, the method recommended for setting out an angle by the aid of a protractor is thus stated :—"Set a pair of dividers to the space between 0 deg. and 60 deg. on the scale of chords, and with this distance as radius and P as centre, describe an arc of a circle large enough to contain the required angle. Again apply the dividers to scale of chords and measure a space equal to the number of degrees required. Then with P as centre and the length so obtained as radius, cut the arc M N at N. Join N to P. Then M N P is the angle required (fig. 19)." Now we think it well the student should be told that a base-line with P as a point thereon is desirable as a preliminary institution. Let us call this line *a b*. The first arc, which we will call *c d*, when described from P, cuts the line *a b* at the point M. It is manifestly impossible for an intersecting arc (say *e f*) to be described from P, as laid down in the rule, but it may be from M. It will then cut the arc *c d* at N. Thus we get the three required points for the angle M N P. If the axioms of Euclid be correct, the whole of the first arc cannot correctly be called M N, as it is by the author, because a part of it becomes M N after intersection. Inexactness of the kind indicated above no doubt arises from oversight, but is nevertheless apt to puzzle students, who often look upon all text-books as infallible. In referring to the use of formulas the author says, "The mere fact that the proof cannot readily be obtained is no reason why any given formula shall or shall not be used." This is unsound doctrine, and we entirely endorse the advice of Dr. Barr to the students of the Institution of Civil Engineers, that no formula on a question of mechanical science can be safely used unless it is known what is behind the symbols, and that only one who knows how a particular formula is derived can be trusted to apply it. Taking the book as a whole, it is good, and may be said to contain all the information ordinarily required by the mechanic. As a handy book of reference it may often be serviceable to other practical men for the purpose of refreshing the memory on some infrequently used rule, or of indicating practical methods perhaps not included in their educational curriculum.

The Merchants Handbook of Money, Weights and Measures, with their British Equivalents. By W. A. Browne, M.A., LL.D. Fifth Edition. London : E. Stanford. 1899.

The title of this book almost sufficiently describes what it is. It gives tabulated lists of the money and weights and measures of the various countries of the world, with their equivalents in British coinage and weights and measures. It appears to be very completely done, and its practical utility is demonstrated by the fact that it has gone into a fifth edition.

TRADE CATALOGUES.

Messrs. R. H. & J. Pearson send us a large illustrated catalogue of their ranges, grates, iron mantel-pieces, marble mantel-pieces, a great variety of grates with adjustable canopies, register grates, tiles, wrought-iron gates and railings, &c.

Messrs. E. H. Shorland & Brother (Manchester) send us their catalogue of warming and ventilating appliances, including many forms of their "Manchester Grate," as well as plans and sections showing its operation. This is a grate with a warm-air chamber in the rear, whence warm-air flues are carried up to discharge into the upper part of the apartment. We do not think this the best place for such an inlet, but the grates can be made to deliver it lower down if desired. The catalogue also illustrates their roof ventilators, inlet ventilators, &c. The double-fronted stove, with a fire-place at each end, which supplies warm air through the top, the smoke flue being conveyed away through the floor, seems likely to be very effective for warming large rooms in public buildings, &c.

Messrs. Greenwood & Sons (Brookshall, Ipswich) send a catalogue of moulded bricks, with a number of full size sections, showing well-designed and effective profiles.

Messrs. T. Inglesant & Sons (Leicester) send a catalogue with a number of well-executed illustrations of carved wood mantels, and several views of rooms fitted by them from the design of their artist, Mr. Douglas Estelly.

Messrs. Fred Jones & Co. send us a descriptive pamphlet, with illustrations and price lists, of their combined silicate cotton and plaster slabs for protecting structure against fire. The slabs consist of their metallic fireproof plaster ($\frac{1}{2}$ in. thick) padded with an inch thickness of silicate cotton. The stock size is 2 ft. 4 in. by 2 ft. 6 in., and this particular size adapts itself for application to joists either 14 in. or 15 in. centre to centre. "It is advisable that the slabs be fixed c. to c. in the case of wooden joists. They are fixed up by means of 3 in. galvanised nails and washers. The plaster slab has a rough face so as to afford a key for the finishing coats, which should be applied in the same manner as to fibrous plaster slabs, *i.e.*, a coat of stuff consisting of two of sand to one of lime, *gauged with plaster*, then finish off at once with Keens' or Parian cements. The matter of fixing is very simple indeed, and slabs can be papered or painted over, especially if Keens' cement be employed for 'finishing,' within twenty-four hours after application. It will readily be recognised that this system is a most economical one, as the use of lath and plaster is entirely obviated." The pamphlet contains descriptions of other applications of silicate cotton made by the firm, and an account of a fire-test with the slabs, at the Chemical Laboratory and Testing Works, Broadway, Westminster, which shows very satisfactory results.

Mr. J. D. F. Anderson sends an illustrated catalogue of his "Intertalk" telephone apparatus, to which reference has already been made in a "Note" in a former issue.

The "Portable Building Company" (Manchester) send an illustrated catalogue of their portable wood and iron structures for stables, summer-houses, bungalows, cottages, &c. The wood houses are constructed of strong unplaned deal framing, morticed and tenoned, and covered outside part with match-boarding and part with rustic joint weather-boarding, $\frac{7}{8}$ in. thick ; external walls lined with inodorous sheet felt and match-boarding, and partitions match-boarded on both sides. The roof consists of strong deal principals, purlins, and galvanised corrugated iron, 24 gauge, coated with Silesian spelter. The buildings seem both useful and economical.

Messrs. Dowson, Taylor & Co. (Manchester) send an illustrated catalogue of their armoured sliding fire-proof doors, fitted with patent self-closing apparatus. The doors are constructed of two, three, or four thicknesses (according to the area of opening) of well-seasoned pine boards, planed, tongued, and grooved, and nailed together with wrought-iron nails, driven flush and clenched on the other side. "They are completely covered with tinned steel sheets, put on in such a manner, that whilst free to expand, they exclude the air and cannot become detached."

The Union Plate-glass Company send a description of their "Refrax" glass, stated to be less costly than ordinary plate glass, and more efficacious in the distribution of light.

Messrs. Geo. Price, Limited (Wolverhampton), send a price list of the "Twentieth Century" bent steel side-locking safe. The following is an extract from their description :—"After carrying out many tests in our muffle furnace, we have proved beyond doubt that the Bent Steel' solid corner safe is considerably more fire-proof than the old style jointed corner safe, as the latter allowed most of the steam generated by the composition to escape outwards, instead of retaining it inside to preserve the contents. Still, we were not satisfied that the old style of composition was perfect, and after many experiments we so improved it by additional ingredients that we can now produce a 3¼-in. chambered safe which, under test in our muffle furnace for three and a half hours at red heat, perfectly preserved its contents, whereas the old style utterly failed. Now, by removing all the lock-work from the door in our double patent 'Twentieth Century' safe, we are able to fill the entire chamber with our improved composition, so giving our safe at least one hour's more life in case of fire. . . . By removing the lock from the door, and placing it in the frame of the safe, the old-style burglar is completely non-plussed. It is utterly impossible to drill into the lock from any point."

The F. W. Emerson Manufacturing Company (Rochester, U.S.A.) send an illustrated catalogue of their "drafting-room furniture," *i.e.*, various forms of adjustable desks for drawing, fitted with gearing to set them to any desired angle. The more elaborate examples are fitted also with attachments in the shape of drawers and trays for drawing materials. The catalogue also includes designs of office cabinets of various kinds, including one for storage of drawing boards, and a very useful combined drawer and tube cabinet for keeping drawings either flat or in the roll. The catalogue deserves the attention of owners of large drawing offices.

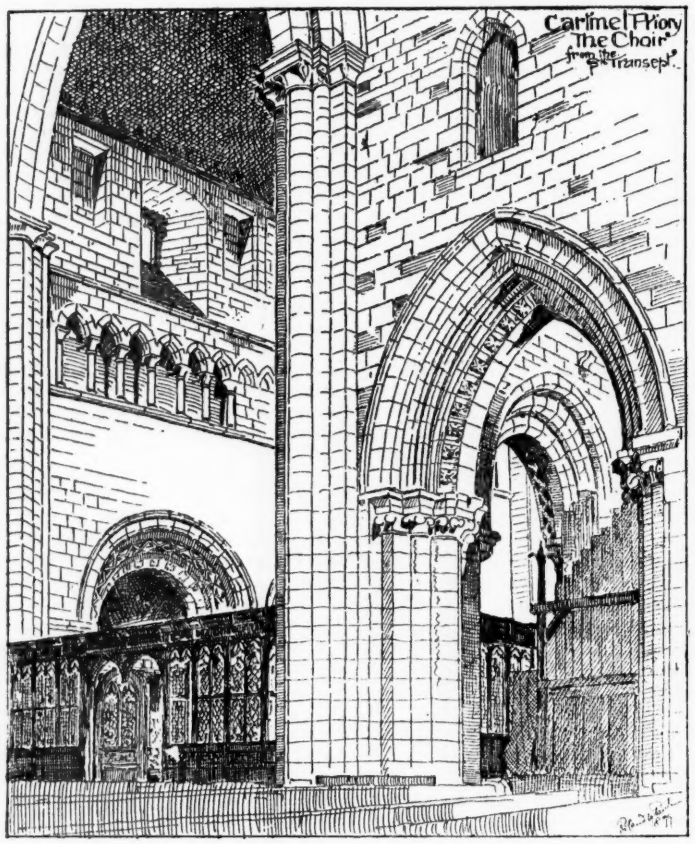
Messrs. R. Moreland & Son send a sheet containing a diagram and a list of safe loads for heights in feet of their solid steel columns for carrying floors. In regard to the advantages of this form of column they remark :—"It may appear at first sight that hollow columns of steel should be used, but at the present time the steel makers are not prepared to supply these at anything like the cost of solid steel, and if cast steel were used it would cost a sum too high for practical purposes. A solid steel column is theoretically an expensive section to use, but the practical issue is in favour of them as regards expense. On account of being solid, the risk of failure in the event of fire is lessened to a great extent" (we rather doubt this) "and the small size is also a great advantage. As regards expenditure, the cost of a solid steel column is about the same as a steel stancheon and little more than a cast-iron column. The caps and bases are made of solid steel and are faced."

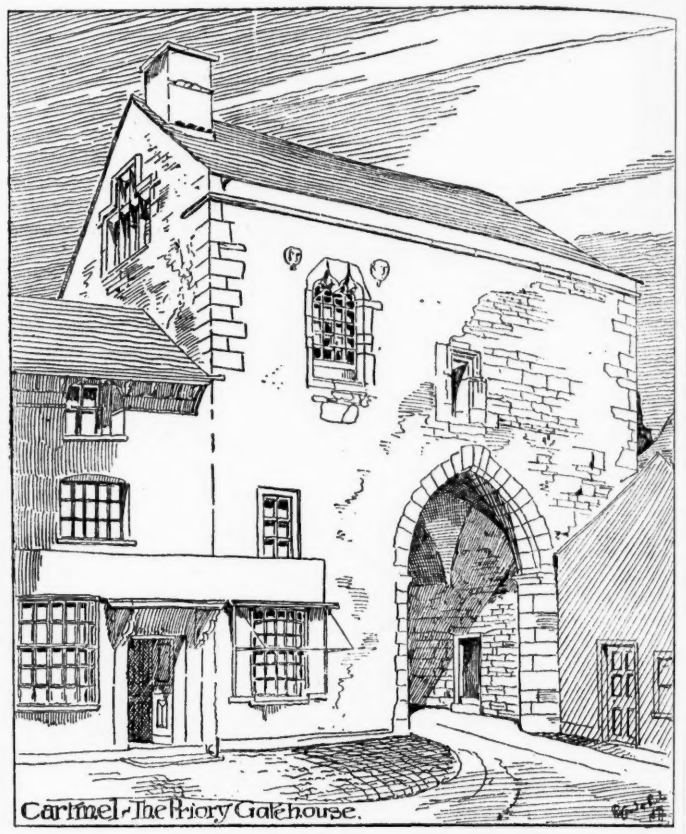
"The Edison and Swan United Electric Light Company, Limited," send a revised edition of their wires, cables, wiremen's tools, and sundries catalogue. It is a very complete catalogue and will be indispensable to those who are interested in electrical installations where high-class and thoroughly substantial work is required. The notes on joint-making and on the selection of cables ought to prove very useful to those who are not technical experts. The wires and cables are of purely British manufacture, and the tests to which they have been subjected give excellent promise that they will stand well in practice. Some of the cables are guaranteed to have an insulation resistance of five thousand megohms per statute mile—a standard thought quite unattainable a few years back. We can congratulate the company on the high-class nature of their manufactures, as shown by this catalogue.

The Birmingham Guild of Handicraft illustrated catologue of fittings for electric light, gas, &c., shows quite the best designed series of electric light fittings that we have seen ; though mostly simple, they are unexceptionable in form and design, and in the best taste. The gas lamp designs deserve the same praise ; they show simple metal designs, in shapely curves, and not disfigured by any so-called "ornament." It shows what a change has come over Birmingham in these matters, owing to the teaching at her art school. Not so many years ago this was the last kind of work that anyone would expect to get from Birmingham.

Messrs. Pilkington Bros. (St. Helen's) send us a small pamphlet as to their wired glass, which is an excellent material. Of its resistance to the action of fire mention is made in another column of this issue, in relation to a test by the British Fire Prevention Committee. They also send us a catalogue of what they term "Fancy rolled Cathedral patterns" of white or tinted glass, suitable where an obscured glass is wanted. They would do better to drop the term "Cathedral glass," at least in appealing to architects, since the term signifies in general a kind of glass which most church architects now hold in horror ; and it is not applicable to the class of patterns shown, which are not (in the usual sense) ecclesiastical in character. As methods of giving an interesting and effective surface treatment to a glass while serving the purpose of obscuring it, some of the patterns are however very effective and well designed ; we may notice especially the "shell" pattern and the "Indian" pattern.

New Town Hall for Norwich.—Norwich Town Council have decided to erect a new Town Hall. The cost of the new buildings is estimated at 65,000*l.*





Illustrations.

CARTMEL PRIORY.*

THE fine cruciform church at Cartmel lies about two miles from the watering place of Grange-over-Sands on Morecambe Bay, and is delightfully situated in a sheltered valley. A priory of Canons of the Order of St. Augustine was founded here in 1188 by William Marshall, Earl of Pembroke, and to the original foundation a considerable part of the present church belongs. Additions and alterations were made at later dates, but the original simplicity and severity of its exterior effect have been largely preserved.

The general plan of the church is also very simple, consisting of a nave of three bays with aisles, aisleless transepts, a tower over the "crossing," and a choir and presbytery of three bays with aisles. There is a south porch in the angle of the nave and south transept of post-Reformation date. The early work includes the north wall of the nave, a small part of the south wall (including a fine doorway), the piers and arches of the crossing, the main walls of both transepts, and the walls of the presbytery and its north aisle. There are still traces of the corresponding south aisle to be seen on the east wall of the south transept, where a portion of the plinth, with its return, still remains, and on the south side of the south arcade of the presbytery between the eastern respond and the Harrington tomb, where the angle shaft and traces of the east wall can be seen. This has been indicated by dotted lines on the ground plan. The whole of this early work is Transitional Norman, of very beautiful design and proportion, and with some very elaborate detail in places. The round arch occurs in the choir-arcades and in some of the lesser arches in the transepts. But the triforium arcade of the choir and presbytery, the arches of the crossing, and those from the transepts to the aisles are pointed. The doorways in the nave aisles, near the transept, have pointed and circular arches on the north and south respectively. The south door and the choir arcades are ornamented with both the chevron and dog-tooth ornament, and this latter occurs on the arches between the transepts and the choir aisles (see interior view). The caps, almost without exception, have square abaci.

The Early English period seems to have been chiefly marked by the insertion of lancet windows, one on either side of the presbytery in the easternmost bay; two in the north wall of the transept, and others in the side walls of both transepts. In the fourteenth century the transitional south aisle of the presbytery was removed, and a new aisle of greater width and length was built in its place. Not only did this give increased accommodation for side altars and monuments, but doubtless it was built while the Transitional work was standing, so as to render this part of the church as little liable to exposure as possible during the progress of enlargement. The beauty of this aisle and of the tracery of the four windows—three on the south side and one at the east end—is equal to anything in the church for proportion and design. The tracery varies in each case, as will be seen by the exterior view.*

In Perpendicular times the nave of the church was almost entirely rebuilt, the wall of the north aisle being retained, as the cloister was on that side, and the doorway on the south side near the transept. It is quite possible that the length of the nave was shortened at this period. It was designed with an arcade of three bays of considerable span, and the west and south walls were rebuilt, the south wall on the lines of the earlier aisle. A five-light window was placed in the west front flanked by two boldly-projecting buttresses, and at the end of each aisle a window of three lights. A doorway in the south wall, near the west end, is of this date, and probably the two windows eastward of it. The Transitional east end gave place to a lofty Perpendicular window of nine lights transomed, and the north aisle of the choir was lengthened to correspond with the Decorated south aisle, although in breadth it retained its early dimensions. The clear-stories throughout the church belong likewise to this date, with their embattled parapets, and the curiously designed central tower with its upper stage set diagonally on the lower, a quaint if not perhaps quite satisfactory feature, yet one which gives to the church a distinct and unique character of its own. In rebuilding the nave, the triforium was omitted, and two square-headed windows of two lights were placed over the piers on each side. The small size of the clearstory throughout the church and its cramped appearance was more than counter-balanced by the size of the windows in the east and west ends, and in the aisles.

The interior produces an impression of greater size and spaciousness than is in reality the case, and the richness in many places of the interior is in strong contrast to the comparative plainness of the exterior. Beyond the good proportion of the nave arcade there is nothing of any particular interest in the west arm of the church. In the transepts are several alterations and insertions of details in the Transitional work, but the choir and presbytery are full of valuable detail.

The first bay of the eastern arm is occupied by a rich series of canopied stalls, twenty six in number. The seats, with their carved misereres, are said to be of the time of Prior William de Waltona, who lies buried on the north side of the presbytery. These stalls are of late fourteenth-century date, but the canopies and screen-work are, however, of much later date, Renaissance in character, with a profusion of ornament and pierced tracery, retaining as much work of this date does, the detail and feeling of Gothic times. The backs of the return stalls form a choir screen with double doors in the centre, and the screen work is carried across the second bay of the choir, with a doorway on either side forming the "upper" entrances to the choir. These doorways have good hinges and lock-plates of the period.

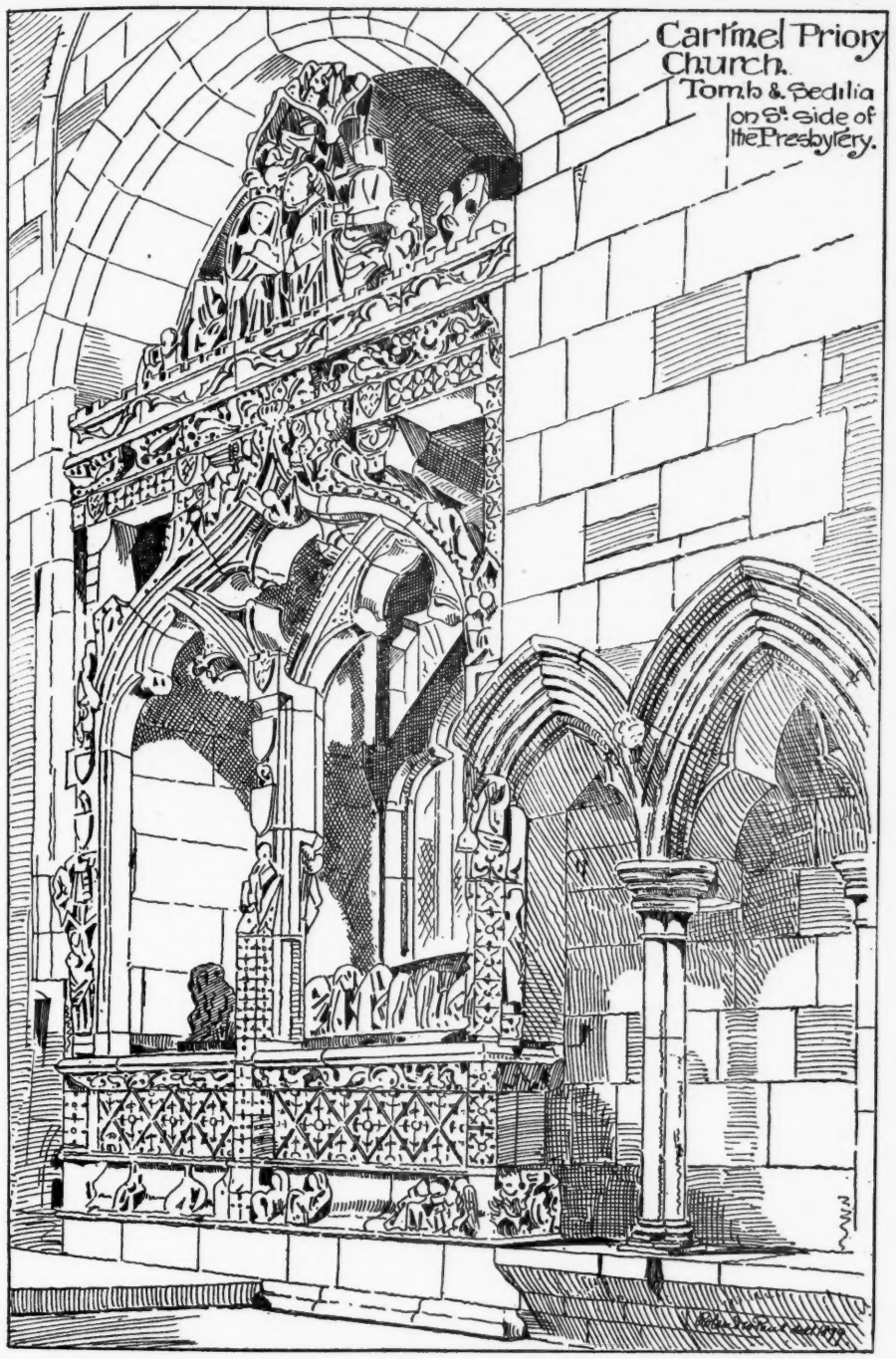
The easternmost bay of the presbytery has on either side lancets, now blocked, which, before the extension of the aisles in the fourteenth and fifteenth centuries, were external. Under that on the north are a small perpendicular doorway (also blocked) and a recess containing the slab of William de Waltona. It

bears a cross incised on it and the following marginal inscription: "HIC JACET FRATER WILELMVS DE WALTONA PRIOR DE KERTMEL." A smaller slab of earlier date lies near it, and in the north aisle are several other examples—one with a sword, a second with a chalice in the centre of the cross, and a third with the same emblem at the side of the shaft. Here is also the font cover, dated 1640, and decorated with blue and gold. The font in the nave is modern.

On the south side of the presbytery are remains of the sedilia—one arch perfect and a

* The series of the "Abbeys of Great Britain" is continued this month with illustrations of Cartmel. For the list of Abbeys which have already appeared, and for particulars of future arrangements, see p. xviii.

* In reality a large tree stands at the angle of the churchyard and obstructs the view of these windows, but it has been omitted in the drawing in order to show the architecture of this part of the church more clearly.



portion of another adjoining; and a lofty canopied tomb to two members of the Harrington family, of Wraysholme Tower. We give a view of this striking piece of work as seen from the presbytery. The monument seems to have been much defaced and altered, but there is no reason to suppose that it does not occupy its original position. The sedilia and the lancet-window on the south side have been partially destroyed, and the space arched over with a broad segmental arch of the full thickness of the wall. The male effigy carries a shield bearing the Harrington arms, and several lesser shields on the front of the monument and in the lower part of the cornice are similarly charged. The design of the canopy consists of a broad ogee arch, subdivided by a square-panelled shaft and ornamented with bold crockets, and a large finial flanked by angels apparently in the act of receiving the soul of the deceased, represented by a small figure suspended slightly below them. Over the cornice is a group of figures, the crowning of the Virgin forming the centre subject under an elaborate canopy, with several figures of varying size kneeling in adoration on either side. Other sculptures on various parts of the monument include the Deity with both hands raised, the Crucifixion, the Virgin and Child, and St. Catherine, also two quaint series of cowled figures, one group kneeling by the side of the effigy in the act of prayer, and another series seated in the moulding of the plinth. Two, near the west end, are reading from a large book. At the angles of this plinth are the emblems of the Evangelists. The whole of the carving is treated very boldly, and the general effect of the monument is unusually fine. A portion of the ceiling of wood retains traces of colouring. On the south side in the south aisle is another female recumbent effigy, but without inscription.

Although but comparatively little of the ancient glass is left, sufficient exists in the great east window and the east window of the south aisle to prove its excellence in design and colour. The glass in each case is coeval in date with the window in which it is placed. The east window of the south aisle is of five lights. The two outer ones are now blocked up, and in the remaining three and the tracery above are fragments of a "Jesse." The figures are seated and surrounded by foliage—one in the centre is in a vescica, but the word REX can only now be made out. In the tracery above is a censing angel in green and buff robes. Of the glass in the great east window, enough to fill the upper part of three of the lights only remains. These comprise three large figures—one a bishop on a rich blue background—under canopies. In the tracery of a Perpendicular window in the north choir aisle are canopy work and two small figures.

The Perpendicular extension of the north aisle of the choir is now used as a vestry. It is on a higher level than the aisle and approached by a short flight of steps. Below it is a crypt or cellar, now used for fuel. In the vestry is a small museum, including some interesting printed books and a curious umbrella, said to be two centuries old, with a wooden frame and painted canvas cover. Among minor points worth noting in the church are the arches in the transepts, which served to light the ends of the triforium passages. These occur on the west side as well as on the east, showing that the Transitional nave had a triforium, as in the choir and presbytery. The bases of the eastern pair of columns in the nave arcade have been cut away, probably for the reception of a screen. In the south wall of the south transept is a staircase leading up through the thickness of the wall to a stair turret in the south-east angle. In this same wall, near the south-west angle, is the doorway which led to the dormitory of the original cloister. There seems but little doubt that the original cloister court of Transitional date was on the south side of the church. The dormitory door proves this, and on the outside of the west wall of the transept is a square-headed recess—probably a book cupboard. In the thirteenth or fourteenth century the position of the cloister was changed from the south to the north side of the nave, and the corbels for supporting the roof are still visible against the aisle and transept walls. Hence also the insertion of Perpendicular windows and a doorway in the south aisle; whereas the north wall remains blank. Of remains of the priory buildings, fragments may possibly be built into the buildings on the north and north-west sides of the churchyard. The only building, however, in at all a perfect state is the gate-house. It is of fourteenth century date, with a vaulted entrance and two two-light windows with ogee heads—that on the north side being longer and transomed—besides three or four of smaller size. The gateway stands at some little distance west of the church, and faces north and south. We give a sketch of the south front taken from the market-place.

The dimensions of the church are as follows:—

Total internal length, 168 ft. 6 in.
Internal breadth of nave and aisles, 65 ft.
Internal breadth of choir and aisles, 76 ft. 6 in.
Length of transepts, 110 ft.
Width of transepts, 28 ft. 6 in.

For some years the choir remained roofless, and this no doubt accounts for the small quantity left of the stained glass of the east window and the side aisles. All the roofs are modern and of timber, and on the ceiling of the belfry is the inscription, "Built 1188, restored 1850."

The chief modern monument is one in the north aisle of the nave to the memory of the late Lord Frederick Cavendish. Both font and pulpit are also modern.

HOLY TRINITY CHURCH, ROEHAMPTON, S.W.

The above-named church, which was consecrated on February 19, 1898, is built upon an excellent site on Wimbledon Common, close to the village of Roehampton, and its spire, which rises to a height of over 200 ft., can be seen for miles round. Our illustration, taken from a drawing exhibited in the last Royal Academy, is a view of the interior looking east. The nave, which is 80 ft. in length by 24 ft. broad, is divided into five bays, with spaces for mural decoration, and a clearstory above. Aisles 12 ft. 6 in. wide, are placed north and south, and a double transept, 32 ft. long and 24 ft. broad, is thrown out on the north side and forms the nave of an apsidal-ended chapel. The chancel, which is well raised, is 36 ft. long, and the same width and height as the nave. A lofty arch divides the chancel and nave, and one of the chief features of the design is the large traceried screen that fills the arch, with a sculptured figure of an angel descending with the message of peace: "On earth peace, good will toward men." A choir of sculptured angels occupy the niches in the base of the screen, and elaborate wrought-iron gates are placed at the entrance.

The reredos, which is of considerable height and gives dignity to the east end, is built of various stones, marbles, and alabaster. Representations of the Crucifixion and Institution of the Eucharist, cut in high relief in alabaster and coloured, fill the upper and lower panels respectively. Cartoons for these subjects were supplied by Mr. E. A. Fellowes Prynne, brother of the architect; and the whole of the sculptured and carved work in wood and stone in the church was carried out by Messrs. Martyn, of Cheltenham. The pulpit is carried out in alabaster, with polished marble and granite columns and steps in the base, the upper panels being filled with glass mosaic, and niches at

the corners are occupied with figures of the Four Evangelists.

An electrical organ by Messrs. Hope, Jones, & Co. is placed in a chamber on the south side of the chancel, the console being on the north side, and the connecting wires carried across the chancel in a channel under the floor. An apsidal baptistry is placed at the north-west end of the church. The font, which is made of alabaster, has four sculptured panels cut in low relief, and is supported on a marble and granite base. An elaborately carved oak cover is suspended from the roof, the counterbalance weight being formed of a copper dove. The east, west, and transept windows have been carried out by Mr. C. E. Kempe, and the baptistry and chapel windows by Messrs. Percy Bacon & Bros. The church is lighted by electricity, the work being carried out by Messrs. Laing, Wharton, & Down.

The heating is on the low-pressure hot-water system, by Messrs. Dargue, Griffiths, & Co.

Complete designs for the church, fittings, and furniture were supplied by the architect, Mr. Geo. H. Fellowes Prynne, of Westminster, under whose supervision the work was carried out by Mr. A. Porter, contractor, of Tottenham.

SOME TRAVELLING SKETCHES.

THE capital from the nave of Hereford Cathedral is one of a series possessing a barbaric majesty that it would be hard to equal. The arcade of the nave dates from 1079 to 1140. The unfinished vaulting shafts have rather an awkward appearance.

The Tour de Charlemagne with the Tour de l'Horloge and part of a little cloister are all that remain of the once celebrated Abbaye de Saint-Martin at Tours. They were erected in the reign of Henry of Anjou, King of England.

The splendid capital from the choir of Canterbury Cathedral is a fair specimen of the well-known work of William of Sens. The date is 1178.

The capital from the south arcade of Colwall Church, at the foot of the Malvern Hills, is thoroughly English, though of a somewhat uncommon type.

The twelfth century church at Amboise is of a type not uncommon in the basin of the Loire. The capitals have a very Byzantine appearance.

The capital from SS. Nicolas or Saumer, Blois (1158 to 1210), is an excellent example of Early French foliage. This fine church contains so much foliage of the best description that it is difficult to fix on any capital as being better than the rest. E. M. HICK.

The Student's Column.

ROADS: THEIR CONSTRUCTION AND MAINTENANCE.

PART III.—CONSTRUCTION (*continued*).

15.—SELECTION OF ROAD-LINES (*continued*).

IT was shown in the previous article that, in laying out a line of road, it is, above all things, necessary to avoid steep gradients. It is also important to reduce the total rise and fall to the least possible amount. The great Holyhead road constructed by Telford, with two exceptions, has no gradient exceeding 1 in 30. The old road which this was designed to supersede had higher gradients and was, moreover, two or more miles longer; it also exceeded Telford's road in the total rise and fall by 1,283 ft.

Curves.—In laying out a road there is a natural tendency to secure the desired end by making the distance as short as possible; but it is seldom possible, even if it is desirable, to continue a road for any great distance in a straight line, without incurring prohibitive expense in cutting and embanking or in overcoming natural obstacles. It may often be a difficult matter to decide between a very winding road, with easy gradients, following the contours round the hills, as at Y Y in fig. 1, or a straight road, as X X, levelled by cuttings and embankments. Curves, where necessary, should be placed in suitable positions, and at the bends the ground should be level. Sharp curves should be avoided. In all cases there should be sufficient room for a team to halt. On a first-class road the curvature should not exceed 50 ft. in radius, although in hilly or mountainous country it may be necessary to increase the curvature to a 20 ft. radius. In laying out curves it is better to select good turning places first, and then to lead up to them by the easiest gradients possible. Erroneous ideas are likely to be held as to the amount of increase in the length of a road owing to its curves. Curved roads are often very little longer than a straight road connecting the ends of the curve; and, for the purpose of avoiding a steep slope, it is considered justifiable to increase the length of a road by curves as much as fifteen times the vertical height avoided by the detour. Deviations from the straight line are often necessary also for the purpose of connecting towns which lie near the line of route.

Geological Considerations.—In addition to the considerations mentioned above the question of the extent to which gradients can be diminished by curves or cuttings is often determined by the geological structure of the country. The cost both of construction and maintenance of roads may be considerably increased by neglecting to investigate the geology of the area traversed. For this purpose both the nature of the rocks as well as the direction of their stratification must be taken into account. Where the road follows the natural surface of the ground, the stability of its foundation is largely influenced by the nature of the underlying rock. Bogs and marshy swamps present difficulties which ought particularly to be avoided, and all ground liable to floods should be carefully noted. Even in strata which are apparently solid and homogenous the presence of springs may cause certain portions of a road to be continually wet. This difficulty is more especially common at the junction of pervious and impervious strata. It is usually the case that geological boundary lines coincide with marked changes in contour; so that a change of gradient is generally one of the consequences resulting from a change in rock formation. It is, therefore, important to know exactly where the boundary lines of different strata intersect the line of a proposed road.

It also follows from the above considerations that a contour road will in general keep more closely to one geological formation, that is to say, it will run along the line of outcrop of the strata; while a road which crosses successive outcrops will be marked by irregular gradients, which may entail considerable expense in cuttings and embankments. The nature of the rock must in this case be carefully examined; for it may happen that the cost of cuttings may be more than counterbalanced by the value of the rock for subsequent use in the construction and repair of the road. In this case a cutting would be more advantageous than a detour or a surface gradient.

In making cuttings geological considerations often determine the best direction, especially in hill sides, where it might at first sight seem to be immaterial on which side of the hill should run. In the accompanying illustration (fig. 2) we have road cuttings in inclined strata on each side of a hill. Such strata are extremely liable to *slips*, one bed sliding over another in the direction of the dip. This is more particularly the case after the action of frost or heavy rainfall, and when the strata consist of alternations of permeable rock with seams of impermeable clay. The amount of inclination of the strata is also important in this respect. All rocks have a certain *angle of repose*, beyond which they will not stand in a cutting or embankment; so that if the angle of dip exceed the angle of repose for the particular rock in question there will be a danger of the occurrence of slips. It will now be seen how this question influences the proper position of a road. If the cutting is made towards the rise of the beds, *i.e.*, on the right hand side of the diagram, there can be no possible danger of slips; but if the left hand side is chosen the side of the cutting will be a source of continual trouble and expense. Not only in hill side cuttings, however, but also in other cases the dip of strata must be taken into consideration before a proper estimate can be formed of the expense which will be incurred. In fig. 3, it is obvious that if the dip of the strata is greater than the angle of repose, that side of the cutting which is towards the rise of the beds will need to be benched back, as in the diagram, until the slope of the cutting is less than the angle of repose of the strata. This of course involves an increased expense in excavation, which should be taken into consideration when weighing the advantages and disadvantages of certain lines of route.

Cost of Construction.—There are, therefore, many, and often diverse, elements to be taken into account in the location of roads, but all of these are practically included in the question of cost. Given unlimited powers of expenditure and there will be found few natural obstacles which cannot be overcome by engineering skill. In practice, however, the money which is available for road construction is limited by the locality and the class of traffic which is to be accommodated. The engineer, therefore, in selecting a road site, has to bear in mind the question of expense, which may conveniently be sub-divided into the following items:—

1. Surveying and clearing the ground.
2. Drainage.
3. River crossings.
4. Improvement of natural gradients by cuttings or embankments.
5. Construction of the road.
6. Incidental works, such as hedging or fencing.
7. Future cost of maintenance.

A great deal, therefore, depends upon the proper selection of the line of road and the avoidance of obstacles entailing unnecessary extra expense. At the same time, it is not always wise to cut down the initial outlay to the minimum amount possible. It may happen that the result of such a mistaken policy is to supply a road which is for all time a source of trouble and expense, involving both excessive wear and tear on horses and vehicles, and a loss of time and money to the community, all of which might have been avoided by a small amount of extra cost in the original construction of the road.

The better plan is to select the route, if possible, in such a manner that, while keeping within the limits of expenditure necessitated by the circumstances of the case, future improvements may be made in the way of shortening distance by cutting off curves, or in any other way which the ground affords. The relocation of unsatisfactory portions of existing roads is one of the improvements which is sadly needed both in this and other countries, and forms a striking illustration of the necessity for the greatest care in the first laying out, errors in which are in many cases the cause of the unsatisfactory condition of some roads in the present day.

Laying out the Line of a Road.—Having now directed attention to some of the points affecting road sites, it remains to illustrate these points further by explaining in greater detail the course of procedure to be adopted in the preliminary stages of road making. In the first place a contoured map of the ground must be carefully examined, and the general direction selected which appears to be best suited to all requirements, due consideration being given to any divergence necessary to include neighbouring centres of population, or to avoid physical difficulties suggested by the shape of the ground.

Certain points will at once present themselves to which it will be desirable, in any case, to bring the line of road. Thus, in crossing a range of hills, the lowest col, if not too far from the direct line, and if easy of access, will be a point to which the road should converge. In crossing river channels, again, there are generally certain places which offer exceptional facilities for the construction of bridges. Such points as these may be called *ruling points*, because they mark localities through which the road must be made to pass, and which, therefore, largely determine its direction.

The primary ruling points having been thus determined, the next consideration is to select the best course towards them, for which purpose secondary features must next be considered; amongst the most important of which will be the question whether the road is to follow surface gradients, or whether embankments and cuttings will be required. In the former case, the chief point to determine will be how far it will be possible to keep the gradients moderate, without unduly lengthening the road. Except for special reasons, such as the geological points already mentioned, cuttings and embankments should only be adopted when there is such a clear and substantial gain as will justify the greater outlay involved. Contour roads may at any future time be straightened by cutting across the curves without interfering with the regular course of traffic. No rule, however, can be

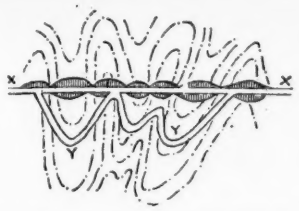


Fig. 1.—Gradients avoided by contour roads.

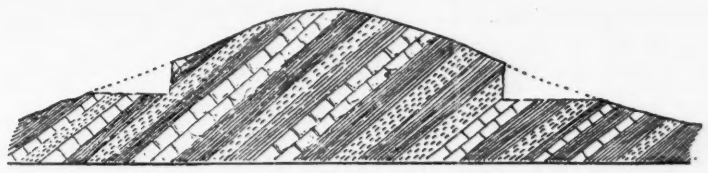


Fig. 2.—Road cutting on hill sides.

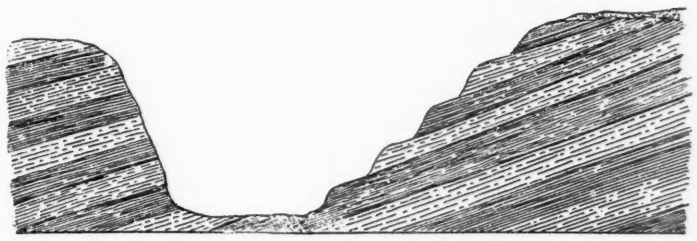


Fig. 3.—Road cutting in inclined strata.

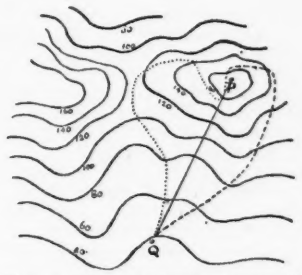


Fig. 5.—Scale 3 inches to a mile.

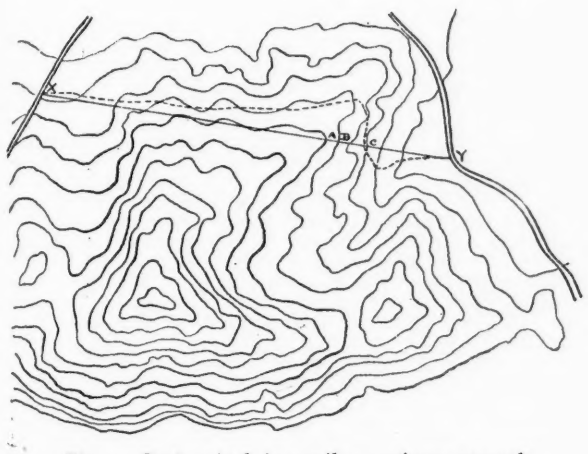


Fig. 4.—Scale 1 inch to a mile: contours normal.

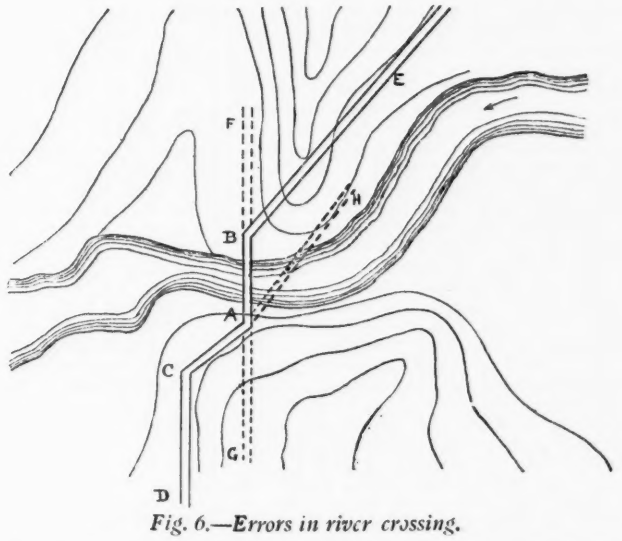


Fig. 6.—Errors in river crossing.

laid down, and each particular case must be judged solely upon its merits.

In general, all the cases which are likely to arise in practice fall under three principal heads, viz. :—

1. Where the points to be connected by a road lie in the same valley and on the same side of it.

2. Where they lie in the same valley, but on opposite sides of it.

3. Where they lie in different valleys, with one or more intervening watersheds.

The first case is, of course, the simplest, as there will generally be no very large streams to cross. The accompanying example will illustrate this case. A cross road, fig. 4, is required to be made from X to Y, following the shortest line, while avoiding any gradient steeper than 6 deg. Here X Y are the only ruling points. Since the scale of the map is 1 in. to a mile, and the contours are normal, the vertical interval is, by the rule already stated, 60 ft. Now 6 deg. is a gradient of 1 in 10; that is, 60 ft. in 600 ft., or 200 yards. We must therefore cross the contours in such a direction that the length of road intercepted between the contours must in no case be less than 200 yards, measured on the map scale, that is, ·23 in. (see normal scale of slopes, fig. 2, in the last article). The straight line between X Y shows that the slopes at A B C are too steep; but by deviating, as in the dotted line, in order to cross these contours diagonally, the road is kept within the required limits of gradient.

It may sometimes be necessary, in order to avoid too steep a gradient, to overshoot the point at which the road is to terminate. For example, in fig. 5, it is supposed that the shortest road is required between Q and P, no gradient exceeding 5 degrees. Here the scale of the map is 6 in. to a mile, and the vertical interval is 20 ft. Now, 5 deg. is 1 in 12. Therefore, the horizontal equivalent for 5 deg. is 240 ft. or 80 yards. The contours must, therefore, be crossed by the road so that the length intercepted is nowhere less than 80 yards on the map scale. The straight line is obviously again inadmissible; but the road may be kept within the required limits of gradient by following either of the dotted lines, of which that on the right hand is obviously the shorter in distance.

These examples will sufficiently illustrate the methods to be followed where no intervening ruling points need be considered. Under the second head, where an intervening river has to be crossed, the point of crossing will be a ruling point, which should be selected with great care *before the general line of the road is determined.* The importance of this precaution cannot be exaggerated, as nothing spoils a road more than a badly chosen bridge approach. Of course, in some cases there will be no great difficulty, the river, perhaps, presenting equal facilities for crossing at all points near the line of route. In other cases, however, the presence of river terraces, treacherous or precipitous banks, or other causes, will restrict the facilities for crossing to, perhaps, one point. We will suppose that A B, fig. 6, is a favourable point for the position of a bridge. Now, if the road has already been laid out along D C, in order to approach the river at A, a curve is necessary; and if the direction of the road on the other side of the river is required to be towards E, on the right of the spur indicated by the contours, a second curve will be necessary on leaving the bridge at B, unless the obviously bad plan is adopted of crossing the river diagonally towards H. The curve at B is even more objectionable than that at A; for whereas the part of the road D C A is nearly level, being, in fact, parallel to the contour, the part B E is on a steep gradient.

If the bridge at A B is made a ruling point, before the road is located, it will be possible to secure a straight road, as indicated by G F. This course is preferable, even if it involve a considerable cutting in crossing the higher contours. Bridge approaches should be free from sharp curves and steep inclines, and no river should be crossed diagonally.

The third case, *i.e.*, when the road crosses one or more watersheds, presents two variations. The route may either lie across the valleys, as in a coast road, or a road running along the foot of a range of hills; or it may follow the main valley and cross the watershed at its head. In the former case, when the road crosses several valleys, with intervening ridges, it is obvious that, if suitable gradients are to be preserved, either the crests of the hills must be cut through and the valleys filled up, or the road must be contoured on the hill sides, involving a greater length. This case has already been illustrated in fig. 1; and the course to be adopted will be mainly determined by the expense involved in constructing the straighter road. The most favourable case is when the necessary cuttings as nearly as possible balance the infilling of the hollows.

Where the road follows the main valley, and crosses the watershed at its summit, the lowest point of the watershed becomes a ruling point. The gradients often vary considerably on opposite sides of the watershed, and a descent on the far side may only be possible by a zig-zag path. Cuttings at high elevations should be avoided both on account of the difficulty in keeping the slopes in repair and also on account of the danger of snow drifts.

In all cases it is worth while to pay attention to the following rules in selecting road lines :—

1. Where ascents must be made, ascend continuously, and do not lose levels, which have been once gained, by counter-grades.

2. On a long incline make the first portion the steepest, and, if possible, break the gradients by level stretches in between.

HOOKS FOR LADDERS.—Mr. Herbert Charles Osborn sends us the specification of a patent he has taken out for securing hooks to the upper portion of a ladder to hook into the eaves gutter of a building so as to prevent the ladder slipping. The hooks are attached to clamping pieces screwed into the sides of the ladder, and further steadied by hinged braces connecting them with a shank bar clamped to a similar reverse hook passing round one of the rungs. The same apparatus may be used to assist in connecting two ladders together. The hook attachment to the gutter (where the latter can be depended upon) is no doubt more workmanlike than roping round the nearest chimney stack.

GENERAL BUILDING NEWS.

Proposed Restoration of the West Front of Bath Abbey.—A meeting of the General Committee was held on the 29th ult. to receive the report of Mr. Jackson, the architect consulted by the Executive Committee as to the proposed restoration of the west front of Bath Abbey. Mr. Jackson's report advocated new masonry only where absolutely necessary to replace what had been effaced by the ravages of time. He summarised the repairs he regarded as advisable as follows:—Restoration of the parapets of west gable and slight repair of the central niche and canopy. New head to the figure in central niche, and securing of the trunk by copper dowels where split. New top canopies on single turrets, and partial repair of some others. Substitution of copper ties to some of the statues of the Apostles for iron. Further pinning together of others. One new figure to replace one of which a mere fragment remains. Four new figures on the ladders at the top, and three new figures of angels on the ladders. Repair of label of great west window. New bracket over great window to carry the statue, with new shields and supporters below. Dressing the sculpture of spandrels with preservative solution, and taking casts of three angels. Completion of the three niches of lower part of front, and a statue in the central one. New supporters to the Royal arms. The executive recommend that these repairs be carried out, the estimated cost being 2,000*l.* The adoption of the report was moved by Canon Quirk and seconded by Sir R. H. Paget. Mr. F. Shum thought the pinnacles of the central tower erected in 1833 should be removed, as they were incongruous, or pierced so as to harmonise with those on the west end, but Archdeacon Bothamley, Mr. Foxcroft, and others thought their efforts should be confined to the west front of the building, and Mr. Shum withdrew his suggestion. The Executive Committee was empowered to proceed with the work and to issue an appeal for the remaining sum required.—*Western Press.*

St. George's Chapel, Windsor.—Under the superintendence of Mr. Alfred Young Nutt, who recently succeeded the late Mr. T. Howe as clerk of the works at Windsor Castle, Messrs. Wheeler, of Reading, contractors, are carrying out for the Queen some alterations whereby the Royal vault, constructed by James Wyatt for George III. beneath the east end of the chapel, will be entered through an arched doorway at the head of the steps, instead of by the removal of the heavy iron plates. The coffins (about twenty in all) of King George III., Queen Charlotte, and many of their descendants, have been moved from the central stone table on to the stone shelves along the walls, and an installation of electric light will be fitted. As surveyor to the Dean and Chapter, Mr. Nutt designed and executed some repairs and restoration at the chapel sixteen years ago.

Restoration of Exbourne Church, Devonshire.—The restoration of portions of the parish church, Exbourne, has just been completed. The church has an Early English tower arch, which is now fully exposed to view, the apex having been formerly hidden by a plaster ceiling. The base of the font is also Early English. The restoration commenced in 1885, the church being in a bad state of decay when the work commenced. The north wall of the nave was taken down, the stones marked for use again. The chancel was rebuilt, but the east window was retained, also the piscina; a new vestry was erected, and improvements made internally. The centre block of high deal pews was taken away, but the side pews remain, and are of the old-fashioned box kind. The present section of the work embraces the removal of a decayed Georgian plaster ceiling, and the erection of an oak roof with carved cornice and bosses. The centre flooring of the church is now formed of wood blocks. The chief work was the re-erection of the fifteenth-century screen between nave and chancel. This is of early design, dating from about 1440. The screen was taken down about the year 1835. It has been restored by Mr. Herbert Read, of Exeter. The architects are Messrs. Tait & Harvey, of Exeter.

Church, Newborough, near Birmingham.—The foundation-stone has just been laid of a new church at Newborough. The building is to cost, when the entire scheme is carried out, about 5,000*l.* The architect is Mr. J. Oldrid Scott, and the builder Mr. T. B. Lowe.

Church of the Assumption, Howth, Co. Dublin.—This church will be dedicated on the 15th inst. According to the *Freeman's Journal* the style of the building is Romanesque, and the church comprises nave, tower, two transepts, with entrance porches, sanctuary, two side chapels, and sacristies. The nave is 85 ft. in length by 32 ft. 6 in. in width. Each of the transepts is 18 ft. in length by 29 ft. in width. The sanctuary, which terminates in a semi-circular apse, is 16 ft. long by 27 ft. wide. The side chapels are 13 ft. 6 in. in length by 11 ft. in width. The height from the floor of the nave to the ceiling is 40 ft. The sanctuary is divided from the nave by a high and deeply moulded arch, supported on clustered columns of Aberdeen granite. The transepts on each side of the nave are divided from it by an arcade of moulded arches, supported on columns of polished red Aberdeen granite, with carved caps and moulded bases. The ceilings of the nave, transepts, and sanctuary are of Norfolk pine. The floor of the sanctuary is to be laid with mosaic. The floors of the nave and transepts are boarded, and the passages are to be tiled. The tower exteriorly is 16 ft. square, and lighted by lancet windows, with circular rose windows over. There will be two floors in the tower, and the lower portion, which is on a level with the nave floor, will form the baptistry. The tower and spire, when complete, will reach an altitude of 142 ft., and will be surmounted by an ornamental cross. The church exteriorly is divided into bays by pilasters between the windows. The cut-stone work throughout is of Aughrim and Kilquiggan chiselled granite. The walls have been executed in local stone, carried up in courses, and lined inside with Portmarnock brickwork. The stonework has been carried out by Mr. Wm. Lacy, of Howth. The materials for the roofing and other woodwork were supplied by Messrs. T. & C. Martin, of Dublin. The plastering was done by Mr. W. J. Burke, of Dublin. With one exception, the windows were supplied by Messrs. Martin & Sons, St. Stephen's Green. The church was designed by Mr. Wm. H. Byrne, of Dublin.

Church, Brynymaen, Colwyn Bay.—On the 27th ult. the Bishop of St. Asaph consecrated the new Church of Brynymaen, Colwyn Bay, which is situated on the plateau, some 800 ft. above the sea level, at the head of the glen known as Nantyglyn. The architects were Messrs. Douglas & Minshall, Chester, and the contractor, Mr. Evan Jones, Groeslo.

Church Tower, Malvern Link.—The dedication ceremony of St. Matthias' Church tower at Malvern Link took place on the 26th ult. The tower has been erected on the south side of the west end from the design of Mr. F. W. Hunt, of London. The height from ground floor to summit of turret tower fixed on the south-west corner of the square tower is 100 ft. It is built of local stone, with Bath stone dressings, and carvings by Mr. Forsyth, sculptor, Worcester.

New Church, Aston, Birmingham.—A new church has been erected at the corner of the Frederick and Whitehead roads, Aston. The total cost is about 5,000*l.* The nave of the new structure is 83 ft. long and 21 ft. wide, and divided from the aisles by arcades each of five arches. The aisles are 72 ft. long and 13 ft. 6 in. wide; width of church inside from north to south, 52 ft.; north and south transepts, 32 ft. 6 in. wide. The chancel, which is apsidal, is 32 ft. by 19 ft. 6 in., and there are north and south chancel aisles; that on the north is used as an organ chamber. The building is faced inside and out with white Leicester bricks, with bands of red Leicester bricks. The windows and columns of arcades and copings are of Bath stone. The work has been executed by Mr. John Webb, of Handsworth. Messrs. J. A. Chatwin & Son, of Birmingham, are the architects; Mr. Meredith, of Aston, was clerk of works; the heating apparatus was supplied by Benjamin Parker, Limited; and Messrs. Thomason & Co. made the gas pendants, &c.

Restoration of St. Andrew's Church, Naunton, Gloucestershire.—The restoration of Naunton Church, which is situated on the Cotswolds in the Deanery of Stow, is now taking place. The church is built in the Perpendicular style. The structural part of the building is in good condition, with the exception of the foundation of the north wall, which is now being thoroughly rebuilt with new stone on a concrete bottom. The scaffolding is erected around the tower, and the openings in the stone work are being filled in and all decayed stone replaced with new. The interior of the church is in a deplorable condition. The chancel is on a level with the nave. The sittings are the old-fashioned, high-boxed pews. The floor is fast going to decay, and many of the pews face westwards. The work that will be carried out is the raising of the chancel floor three steps, the addition of oak stalls and seats in the choir, and the reseating of the church throughout with modern pitch-pine pews. The church will be laid throughout with concrete, upon which will be placed wood block flooring; the walls will be cleaned and pointed, and the north aisle roof, which is now plastered, will be opened out. The special features of the interior of the church are the beautiful carved stone pulpit, the handsome west arch reaching to the roof, and the font. Unfortunately the west end arch is almost hidden by a gallery, but this will be removed, and so the church opened out to the west window. Messrs. Waller & Son are the architects, and Mr. Pointing, of Gloucester, the builder.—*Gloucester Journal.*

Wesleyan Chapel, Penarth.—The foundation-stone has just been laid of a Wesleyan chapel to be erected on a site in Stanwell-road, Penarth. The architects are Messrs. Jones, Richards, & Budgen, of Cardiff.

Congregational Church, Nottingham.—The memorial-stones of the new Congregational church and schools in course of erection in Gregory-boulevard, adjacent to the junction with Radford-road, were laid on the 28th ult. Mr. Harry Gill, of Nottingham, is the architect, and the contract has been let to Mr. William Maule. On the bottom floor will be the schoolroom, seven class-rooms, kitchen, lavatories, and large infants'-room, and above these the church, with seating accommodation for 600, ministers' vestry, and church parlour, and also a small gallery at one end. The buildings are to be heated by hot water on the low-pressure system. The cost will be 4,200*l.*

St. Gabriel's Church, Heaton, Newcastle.—The Bishop of Newcastle has just consecrated the new Church of St. Gabriel, which is situate at the north end of Heaton-road. The Church of St. Gabriel, as at present built, is only a portion of the projected building. The church, when complete, will consist of nave, with north and south aisles, transepts, chancel, morning chapel, baptistry, organ chamber, vestries, &c. The design includes the erection of a tower on the north side of the church. The complete church will accommodate one thousand worshippers. The dimensions of the finished church will be:—Length from east to west, about 150 ft.; breadth across the naves and aisles, 55 ft.; breadth across the transepts, 114 ft. The nave arcade is of moulded stone, with shafts joining a hammer-beam roof. The clearstory and other principal windows are worked in open tracery. The baptistry, situated immediately to the west of the south porch, is apsidal. The morning chapel, situated at the east end, is also apsidal, and will be fitted with enclosing oak screens, as also will the arcading between the chancel and the ambulatory. The floor is of concrete covered with wood. There are five doors to the church for ingress and egress. The whole edifice will be built of stone, and the roofs covered with green slating. Immediately to the west of the church the vicarage will be erected, and space has been allotted on the church site for a parish-room, &c. The portion of the church as already built consists of nave, south aisle, and porch only, and will accommodate 500 worshippers. The short chancel and vestries are temporary. The work has been carried out by the following contractors:—Mr. Baston, mason and joiners' work; Messrs. Kirk & Dickinson, for slaters' work; Mr. Robert Heron, for plumbers' work; Mr. William Ferguson, for plasterers' work; Messrs. Adam Robertson & Son, for painters' work; Gateshead Stained Glass Company, for lead glazing; and Mr. John Grundy, for the warming apparatus by hot air. The whole of the work has been designed by Mr. Frank W. Rich, architect, Newcastle-on-Tyne.

Catholic Schools, Winchester.—New Catholic schools were recently opened in Hyde Abbey-road, Winchester. The site is between the North walls and the steam laundry. The architects were Messrs. Colson, Farrow, & Nisbett.

Sexey's School, Blackford, Somersetshire.—A new Trade school has been built at Blackford at a cost of over 4,000*l.* The school buildings, which are situated on about two acres of ground, comprise a headmaster's house, class-rooms, lecture-hall, cookery school, laundry, and two dormitories. The architect was Mr. A. J. Pictor, of Bruton, and the builder Mr. F. Huish, of Street.

Schools, Thorpe-on-the-Hill, Lincolnshire.—A new school has been erected at Thorpe-on-the-Hill. The building contains a large mixed school-room, and a class-room for infants. The principal room will accommodate seventy-three scholars. The architect is Mr. H. A. Dunn, of Lincoln; and the contractor Mr. French, of Hykeham.

Ruthin County School.—On the 29th ult. the Ruthin County School for Girls was opened. The school, which was formerly an old mansion, has undergone alterations and enlargements, the work having been carried out by Mr. W. Wheeler, Denbigh, from plans prepared by Mr. James Hughes, of the same town.

New Schools at Insch, N.B.—On the 28th ult. the new school buildings at Insch, Aberdeenshire, were opened. The schools were designed by Mr. George Sutherland, architect, Elgin and Aberdeen, under whom the work was carried out at a total cost of nearly 3,000*l.*

The John Usher Institute of Public Health, Edinburgh.—The John Usher Institute of Public Health, the plans of which were passed recently by the Edinburgh Dean of Guild Court, will be erected on a site on the south side of Warrender Park-road. The front of the building will stand back a considerable distance from the street. The building will consist of three stories, in which will be a museum, chemical and bacteriological laboratories, three research rooms, balance, optical, and dark-rooms, water and gas analysis-rooms, three scientific work rooms, observation, disinfection, and incubating rooms, a reading-room, lecture theatre, the professor's private laboratory and retiring-room, a class-room for senior students, a caretaker's house of three apartments, as well as basement accommodation for heating, incinerator, water-storage tank, &c. The extract ventilation from the rooms and fittings will be taken direct to the roof by means of fans, and the building generally will be heated by hot water. The flooring throughout will be fireproof. The walls of the principal elevations are to be built of grey stone ashlar from Doddington Quarry, lined with hollow brick inside. The exterior has been designed in a phase of Classic Renaissance, taking the form of two end blocks connected by a recessed centre part. The roofs will be covered with red tiles. The total cost of the Institute will be about 20,000*l.* The architects are Messrs. Leadbetter & Fairley, of Edinburgh.

Free Library and Institute, Old Trafford, Manchester.—The foundation-stone has just been laid of a new free library and institute for Old

Trafford. The site of the new library is at the corner of Northumberland-road and Stretford-road. The building will be of brick, with terra-cotta facings. The whole of the classes will in the future be centred in the new building. Above the library and the reading-rooms there will be a large hall capable of holding between five and six hundred people. The total cost, including furnishing, will amount to about 8,000*l.* The architect is Mr. W. Thorpe, and the contractor Mr. Jno. Bowden.

NEW PREMISES, PLYMOUTH CO-OPERATIVE SOCIETY.—The Plymouth Co-operative Society have erected a new wing to their block of stores and shops at the corner of Frankfort and Courtenay-streets. Built of Fareham brick with Portland stone dressings, the extension is five stories high, and is in the same style as the older portion of the central buildings. The extension occupies a site of 8,969 square feet, and the work has been carried out by the Society's own workmen, under the direction of Mr. J. T. Trevan, the works manager, from plans prepared by Mr. H. J. Snell, architect.

PROPOSED THEATRE AND PIER, BRIDLINGTON.—At the last monthly meeting of the Bridlington Urban Council the Building and Lighting Committee reported that they had received plans from Messrs. Mangnall & Littlewood, of Manchester, for a pavilion and promenade pier, proposed to be erected on the North Cliff for a grand Hotel, Theatre, Pier, and Arcade Company, Limited, and also of a grand hotel, theatre, arcade, and shops proposed to be erected on the Beaconsfield estate. The committee saw no objection to the plans of the pier, but, before approving the scheme, plans of the full dimensions of the pier would have to be submitted. The minutes were adopted.

NEW BOARD SCHOOL FOR WILLENHALL.—The Little London Board School, constructed to accommodate 332 children, was opened recently. The school contains five class-rooms. It is built in the Gothic style, of red pressed Kingswinford bricks, with Hollington stone dressings. The total cost of the erection, including the asphalting of the playground, will be about 4,880*l.* Mr. J. P. Baker (Willenhall) was the architect and Mr. T. Tildesley (Willenhall), the builder. The interior of the school is paved with wooden blocks; the sides have a 4-ft. dado of white and chocolate glazed bricks, and the upper portions of the wall are of plaster, coloured green.

MESSRS. CHUBB'S NEW WORKS, WOLVERHAMPTON.—The new works of Messrs. Chubb & Son's lock and safe company at Wolverhampton are to be formally opened on the 12th inst. The site, which contains about 18,300 superficial feet, occupies an important position in the town, and is entirely surrounded by public streets, and has its principal frontage in Railway-street. This frontage and parts of the return frontages in Chubb-street and Long-street are occupied by a building about 64 ft. high, containing a range of offices on the ground floor, with a principal entrance at the corner of Railway-street and Chubb-street, surmounted by a turret about 80 ft. in height, and consisting of show-rooms, manager's, clerk's, and timekeeper's offices, packing-rooms, store-rooms, &c. Above the ground floor of this part of the building are four floors each over 200 ft. in length; they consist almost entirely of workshops, but contain also additional stores, rooms for the caretaker, a kitchen and dining-room, and on each floor a lavatory for the men. The stairs are of blue Pennant stone, and there is also an external iron fire-escape stair, giving access from each floor down to the interior courtyard, which is entered by a cartway from Chubb-street. Around this courtyard are the doors of the stairs, the packing-room, machine-shop, smithy, and other workshops, various stores and latrines for the men, all in full view of the windows of the manager's-room. In a basement under part of this building there are additional store-rooms. The rest of the site is occupied by a very large workshop with frontages to Fryer-street, Chubb-street, and Long-street, and having a floor area at the ground level of about 7,000 superficial feet, surrounded by two tiers of galleries, each about 240 ft. long by over 20 ft. wide, supported by steel stanchions and girders. The interior height of this building is about 44 ft. It is approached by a cartway in the courtyard and another in Fryer-street. The principal fronts are faced with Stourbridge red facing bricks; the entrance doorway, the cornices, &c., are of Darley Dale stone; the interiors of offices are lined with hard buff bricks and glazed brick dado. The buildings are warmed for the most part by stoves, and lighted throughout by electric light. The works have been carried out by Mr. Hy. Gough, of Wolverhampton, from the designs of Mr. Chas. H. M. Mileham, of London, who has been assisted in the superintendence of the work by Mr. F. Beck, of Wolverhampton.

MASONIC HALL, BLACKPOOL.—On the 28th ult. the Freemasons of Blackpool held a lodge meeting at the new premises they have erected in Upper Adelaide-street, Blackpool. The new hall has a frontage of 98 ft. It has been erected from the plans and under the supervision of Mr. J. A. Nuttall, architect, Blackpool.

COUNCIL OFFICES, SURBITON.—The new premises erected in Ewell-road, at the corner of Berrylands-road, for the accommodation of the District Council are now completed. The exterior is of red brick facings, and Bath-stone dressing. The ground floor is divided into offices for the Clerk to the Council (general and private office), Overseer, Sanitary Inspector, Medical Officer, Collector, Surveyor (general and private office), and drawing office. At the rear is a lavatory, with a hot and cold water supply, the basement being utilised as a heating chamber. A stone staircase, with wrought-iron balusters, oak rails, leads to the upper floor, the flooring of which is of pitch pine. The Council chamber is 40 ft. by 30 ft. On each side of the Council chamber is a committee-room, while a waiting-room and cloak-room complete the apartments on this floor. The caretaker's rooms are on the second floor, and a lift for the carriage of coals and other heavy goods is provided. Electric-light fittings are placed in all parts of the house in readiness for the current, when it shall be supplied. The building operations have been carried out by Messrs. Gough & Co., of Hendon, the work having been carried out under the superintendence of Mr. Bates, clerk of the works, and Mr. P. Keene, foreman. Messrs. Forsyth & Maule were the architects. An illustration of the building was given in our issue for January 22, 1898

DRILL HALL, LOUGHBOROUGH.—The formal opening of the Jubilee Memorial Drill Hall at Loughborough took place on the 30th ult. The building was designed by Mr. A. H. Walker, C.E., the Borough Surveyor. The hall is approached by a new street, and is built of red brick with stone facings. It comprises the drill hall proper (which is 60 ft. by 40 ft., and is covered by an open-timbered roof), a dwelling-house for the sergeant-instructor, and an administrative block, which includes orderly-room, armoury, and volunteer club-room.

BRISTOL AND CLIFTON GOLF CLUB.—On the 30th ult. the new club house of the Bristol and Clifton Golf Club at Failand was opened. The building is a half-timbered structure. The architect was Mr. W. L. Bernard, Messrs. Cowlin & Son being the contractors.

NEW ISOLATION HOSPITAL, REIGATE. — The Mayor of Reigate recently laid the foundation-stones of the new Isolation Hospital now in course of erection for the borough at White Bushes. Mr. W. H. Prescott, Borough Engineer and Surveyor, prepared the plans for the building.

PROPOSED GRAND HOTEL, BRIDLINGTON.—It is proposed to erect a grand hotel on the Beaconsfield estate. The architects are Messrs. Mangnall & Littlewood, of Manchester. It is estimated the hotel will cost (in conjunction with the theatre, arcade, and shops) about 100,000*l.*

SANITARY AND ENGINEERING NEWS.

THE "EDISWAN" COMMUTATOR BURNISHER.—The only part of a dynamo which requires careful attention is the commutator. If the brushes be carelessly set on it or if it be allowed to get dirty or oily, it will begin to spark badly, and "flats" will soon develop which will necessitate the "turning up" of the commutator on a lathe. Every turning considerably shortens its life; besides, there is always the risk of a short circuit being caused on the armature by the operation, which will cause the burning out of a coil when the dynamo is first run. The constant use of the "Ediswan" burnisher seems to us an excellent method of avoiding these risks. By inserting a strip of emery-paper in the burnisher and then applying it to the commutator, the flexible backing of the burnisher makes the emery follow the curve of the commutator, and so the whole surface is evenly scoured to any degree of roughness required, and it can then be easily polished. It is a simple and convenient apparatus and will be appreciated by those who are responsible for the management of dynamos.

A PIER FOR SOUTHWOLD.—The first pile of the new pier at Southwold has just been driven. Mr. W. Jeffrey is the engineer for the pier, and Messrs. A. Fasey & Son are contractors. The pier is being constructed by the Coast Development Company for the use of the "Belle" steamers, as well as for a promenade, and will enable them to land and embark passengers at all times of tide. It will be of timber, in length 825 ft. and in breadth 30 ft.; there will be a head 120 ft. long and 30 ft. wide, and a lower deck 70 ft. by 15 ft. The depth of water at the head will be 16 ft. at low tide.

FOREIGN.

FRANCE.—At Avignon the municipality has just opened the large market halls intended to replace the old picturesque open-air market in the Place Pie, in the old quarter of the city.——M. Frémiet has just completed the model for the statue of Jules Simon which is to be erected beside the Madeleine. It represents the orator standing at the tribune. A figure of a child at his feet, holding a book, is intended to symbolise those who were benefited by his humanity.——The restoration of the cathedral of Angers has been commenced; the apse is to be completely rebuilt. Unfortunately the work of restoration will necessitate (or so it is considered) the destruction of an ancient cloister contiguous to the church, and of considerable interest. ——M. Trinquesse, the architect, has just completed the new monastery of the Carmelites in the Rue de la Pompe, at Passy. A large cloister occupies the centre of the building, which is in the Romanesque style. The façades to the street, and the chapel, show a fine architectural effect.——The death is announced at the age of fifty-seven, of M. Richard Goubie, a painter of sporting subjects, who has for many years exhibited at the Salon, and gained a medal there and at the Great Exhibition of 1889. He was a pupil of M. Gerôme.——The death is also announced of M. Benjamin Raspail, once a painter of repute, but who had for a long time abandoned art for politics, and became an advanced Radical deputy. He has left to the Department of the Seine his important collection of pictures.

GERMANY.—A building exhibition on a very extensive scale is to be held at Dresden next year, and every effort is being made to make it a thoroughly representative one. It will include an important section dealing with architectural work, practically all the leading architects of the country having expressed their intention of exhibiting.——The City of Berlin has voted 5,000*l.* towards the foundation of a scholarship at the Royal Technical College of Charlottenburg. The only condition is that students resident in Berlin will have precedence in the selection for the scholarships.——The German technical Press remarks on the fact that several new bridges over the River Isar, which was lately flooded so extensively, have been destroyed, whilst several of the old wooden ones are still in position. Among the new bridges destroyed is one that was erected in 1892.——The Senate of the Prussian Royal Academy of Arts has just announced the arrangements for the coming competition for the Government premiums for architecture. It is merely stated that any design of a monumental building will be eligible. The premium is in the form of a travelling studentship of the value of 150*l.* Similar premiums are offered to the sculptors and painters.——The City of Hamburg has decided to arrange a series of public lectures on questions relating to engineering and technical science. A number of well-known men have been invited to read papers. Public lectures have also been arranged on an extensive scale at Berlin under the auspices of the Science and Arts Museum.——The arrangements for the new municipal theatre at Frankfort have now been definitely made, and the execution of the building has been entrusted to Herr Hesseling, the expenditure being limited to 100,000*l.* The theatre is to have a seating capacity of about 11,000, and will be situated on an excellent site near the Gallusgate.——The foundation-stone for the new town hall at Leipsic was laid with some ceremony last month. The designs for this town hall have been the subject of a controversy extending over ten years; but the commission has now been definitely placed in the hands of the City architect.

MISCELLANEOUS.

PROFESSIONAL AND BUSINESS ANNOUNCEMENTS.—Mr. John Byford, lime, cement, and brick merchant of Moody Wharf, Poplar, has taken into partnership his son, Mr. John Byford, junior, and the business will in future be carried on under the style of "John Byford & Son."——Mr. R. M. D. Lucas, architect, has removed his office from 1, Portland-street, Southampton, to Bargate-chambers, 1, High-street.

EMPLOYMENT AT THE CAPE: A WARNING.—The Emigrants' Information Office sends us the following notice, which has been issued from the London office of the Cape Government, in regard to the prospects of labour employment at the Cape:—"The Agent-General for the Cape of Good Hope warns intending emigrants to Cape Colony against proceeding thither unless they have secured employment beforehand. The supply of labour, skilled and unskilled, at Cape Town and other large centres is, at the present time, greatly in excess of the demand, and in other parts of the colony it is amply sufficient to meet all requirements. The result is a state of congestion in the large centres, and the presence of large numbers of unemployed, who have become a cause of much anxiety to the towns affected, and to the Government of the colony. Unfortunately this condition of things is being aggravated daily by fresh arrivals of emigrants from this and other countries. Hence the necessity for the warning which the Agent-General now gives. Reliable information as to the state of the labour market at the Cape can at all times be obtained at the Government Agency, 112, Victoria-street, London, and working men are seriously urged not to commit the folly of emigrating without previous inquiry, when the means of obtaining trustworthy information on the vital subject of employment are so accessible."

COMPLETION OF QUEEN ELEANOR CROSS, SLEDMERE, YORKS.—This cross, which has been several years in course of erection, has just been completed. The height is 55 ft., and it is built of Portland stone. The structure is octagon from the road level to the cresting of the first stage, the cross being constructed in three stages. Beyond the first stage all is square, excepting the second stage, and this has a niche projecting out from each face, thus forming the design of a cross. Above ground is a plinth, rising above which is a flight of eight steps. Each corner is buttressed, and has mouldings and

weatherings, which terminate in a pinnacle with grotesque carvings, gablets, and finials, between the buttresses being moulded panels, with a gablet ornamented with crockets and finials on each panel, while below the cuspings are two shields of arms, including those of England and Castile, suspended from sprigs of oak, maple, and thorn foliage. The moulded cornice is elaborated with designs in roses and oak leaves with acorns, and vine leaves with grapes; above is a cresting of a bold design. In the second stage, on each face of the square, standing under a canopy, is a figure 6 ft. in height. These statues are crowned and hold a sceptre in their hands. The elaborate canopies have carved spandrels, crockets, and finials to the gablets and spires, rising above with crockets and finials, with groups of small pinnacles at each angle. The third stage of the cross is solid, the faces being filled with panels, with traceried heads and gables with crockets and finials. The topmost stage has on each face, between mullions, female crowned figures in a devotional attitude, the canopy above them being enriched by spandrels, crockets, finials, and a spire with crockets rises above, terminating with an elegant copper cross. The figures were executed in the studios of Mr. Thompson, of Peterborough. The architect is Mr. Temple Moore, of London. Mr. John Thompson, of Peterborough, is the builder; Mr G. Mills the foreman of the masons, and Mr. John Baker, of Kennington, S.E., the carver of the ornamental details.

A Non-splitting Nail.—We have received some specimens of the "Fishtail non-splitting nail," patented by Mr. H. Button. The peculiarity of the nail, as its name implies, is that the end, which is flattened out like a cold chisel, is nicked into a kind of fish-tail shape. In driving the nail in, the flat edge with the nick in it is placed at right angles to the grain of the wood, and appears to have the effect of drawing the fibres together, thus preventing the splitting of the wood. We had ocular demonstration of its efficiency, having seen several nails driven with the effect intended by the patentee. It appears both a simple and useful improvement.

Excavations at the Site of Warter Priory, Yorkshire.—Hidden away among the Wolds in the heart of the East Riding the Augustinian Prior and Canons of Warter had their home for something like four centuries, but, as it was with so many of the lesser religious houses that were suppressed in the reign of Henry VIII., the site of this one has been for generations almost forgotten and lost. With the permission of Mr. C. H. Wilson, M.P., the present owner, Mr. W. H. St. John Hope has been engaged with a small body of workmen in excavating the ground, in order, if possible, to obtain an accurate plan of the Priory buildings and surroundings. Judging by the position of the parish church, built in 1863, which stands upon the site of a former one, it seemed probable that it might have formed part of the old monastery church, and Mr. St. John Hope decided to begin his operations to the east of it. His surmise proved to be correct, for almost immediately lines of masonry were discovered which were evidently the southern wall of the presbytery. The stones were beautifully cut and laid, and the building must have been a very substantial one, the wall in places measuring 3 ft. 10 in. in thickness. Turning at right angles towards the south, the remains of the base of the high altar were then found, which bore traces of having undergone alterations at different times. Portions of the flooring of the presbytery were also laid bare; these consisted of square blocks of chalk which had been got from the neighbouring hills. They were in good condition, and most suitable for the purpose. Close to the south wall of the presbytery was found a beautifully cut slab of stone which covered the grave of Thomas Bridlington, the twenty-fifth Prior of Warter, who died in 1448. The Prior was represented in his ecclesiastical robes under a canopy. The foundation of what was probably a vestry, with an entrance into the south side of the building, was traced, together with clear indications of the north and south transepts of the church. The presbytery was without aisles, but there was a narrow passage between the high altar and the east wall. While the men were engaged here a few handfuls of fragments of the glass of the east window, which dated from the fourteenth century, were unearthed, at which period the church must have been to a great extent rebuilt. Only a small piece of the twelfth century work has thus far been revealed, but the foundations of what were probably the chalk walls supporting the choir stalls were found. The work on the north side of the church has not progressed sufficiently to indicate clearly how the buildings stood, but portions of a large chapel east of the transept, and the east wall of the transept itself, together with part of the slype, or passage, to the north of it, were discovered. Immediately in front of the high altar, and close to the surface, there was found a massive stone coffin; the cover of it had been removed, and the coffin was much damaged. It is hoped that the work of excavation will be taken up again in the spring under Mr. St. John Hope's supervision.—*Yorkshire Post.*

Dickens's Houses in Kent.—The approaching sale is announced of Bleak House, at Broadstairs, to which place Charles Dickens went for the first time in 1837 and frequently afterwards, and which he describes in "Our English Watering Place." He stayed at Fort House (locally styled Bleak House) in 1850, and there wrote the latter portion of "David Copperfield"; he published "Bleak House" in 1852-3, but according to the most trustworthy accounts did not write any part of it at Broadstairs. The building of the new Town Hall, Chatham, together with the widening of the street named the Brook, will involve the removal of a block of two houses, in one of which—now No. 18, St. Mary's-place—the Dickens family lived, it is said, during the interval between their removal in 1821 from Ordnance-terrace, Chatham, and their settlement, in 1823, at Bayham-street, Camden Town.

The City Churches.—A committee appointed by the Bishop of London to advise upon schemes for carrying out the provisions of the Union of Benefices Acts (London), have drawn up their report, which, it is rumoured, advocates the pulling down of many of the old churches and the application elsewhere of the proceeds derived from the sale of their materials and sites.

Cowper's Home at Olney.—We learn that Mr. W. H. Collingridge, proprietor of the *City Press*, has acquired, and will present to the town of Olney, the house, in the market place, in which Cowper lived for some years, and of which we lately gave a description. The parlour is to be fitted for the display of his collection of relics associated with Cowper and his friend the Reverend John Newton by way of forming the nucleus of a Cowper Museum.

Fire Tests with Wired Glass.—No. 32 of the Reports of the British Fire Prevention Committee records the particulars of a thirty minutes' test with fire of two skylights made with wired glass by Messrs. Pilkington Bros. The highest temperature during the test was 1,425° Fah. Towards the close of the test water was turned on to the upper surface of the skylights at from 12 lbs. to 20 lbs. pressure for one minute. The glass bulged inwards but did not give way, the water remaining on the concave surface boiled away there. The fire did not penetrate the skylights at all.

The Proposed Removal of Kelvingrove House, Glasgow.—A special meeting of the Parks and Galleries Committee of the Corporation was held on the 26th ult. for the purpose of considering the proposal from the Building Committee of Glasgow Exhibition, 1901, to reverse the decision of the Corporation and allow the old mansion-house in Kelvingrove Park to be removed. The Building Committee of the Exhibition desire to utilise the site for the erection of a hall, capable of accommodating 4,000 persons, suitable for musical entertainments as well as for other purposes in connexion with the Exhibition. It is also proposed that there shall be a refreshment department adjoining the hall, and a balcony from which may be had a fine view of the Exhibition buildings and grounds. Bailie Shearer and Mr. Miller, the architect, having given explanations, the committee resolved, by eleven votes to four, to recommend the Town Council to accede to the proposal.—*Glasgow Herald.*

The Building Trade in Glasgow.—At the opening of the Glasgow Dean of Guild Court, on the 27th ult., Sir James Bell, Bart., the Lord Dean of Guild, who presided, made the annual statement as to the work of the Court. He said that the activity in the building trade, which began to show itself in 1891-2, and increased year by year until it reached its highest point last year, had shown very little evidence of quieter trade. In the year prior to the one under review the linings were 649 in number, with a valuation of 2,106,760*l.* Last year there was an increase in the number of linings to 681, but a decrease in valuation to 2,017,330*l.* In houses and shops there was a decrease in linings from 167 to 114, with a corresponding decrease of valuation from 1,240,410*l.* to 921,385*l.* In public buildings the linings were fewer in number, 5 as against 14, but the valuation showed an increase, 144,000*l.*, as against 135,710*l.* In churches and halls there were fewer linings, 12, against 19 in the preceding year, with a decrease of 2,700*l.* in value. In regard to alterations and additions, there were 402 linings, with a valuation of 341,775*l.*

Workmen's Dwellings at Hull.—At a meeting of the Hull Corporation New Streets Improvement Committee on the 27th ult., the Town Clerk reported that the Local Government Board had written acknowledging the receipt of the plans submitted for the building of a new set of dwelling-houses in lieu of those to be removed in the carrying out of the Prospect-street improvement. The committee were notified that the sculleries of the proposed houses were small and cramped, and that good provision was not made for the storage of food and the removal of refuse. It was further pointed out that it would be preferable if the new buildings were so arranged as to provide a greater air-space, by the construction of another road through the block. The Engineer said the most serious suggestion of the Local Government Board was that of making two blocks instead of one, inasmuch as a larger area would be necessary. With that exception, they might easily fall in with the suggestions. He must, however, point out that the plans were based on those of the London County Council, which had been approved by the Local Government Board. Alderman Massey said the Local Government Board were very insistent. The Committee had proposed to take the new houses into the suburbs, but the Board would not allow them. Now that, at the instance of the Local Government Board, they had decided to utilise land at their disposal, the Board raised a question of ventilation. The Mayor said the letter appeared to bring the matter to a deadlock. The Board did not say they insisted upon the alteration; but if they had to comply, additional land would be required for the street improvement, and at least 10,000*l.* would be added to the cost. It was resolved that the Mayor and Town Clerk should wait upon the Local Government Board, with a view to the withdrawal of the suggestion as to two blocks in place of one.

Proposed Workmen's Dwellings for Highgate.—At the offices at Southwood-lane, Highgate, Mr. R. H. Bicknell, M.Inst.C.E., recently inquired into the application which the Hornsey District Council have made to the Local Government Board for sanction to borrow 16,700*l.* for the purchase of land at Highgate and for the erection thereon of houses for the working classes. Among those present were Mr. T. Wilson, Chairman of the Housing of the Working Classes Committee, and Mr. Lovegrove, C.E. (Engineer and Surveyor).

The Plumbers' Company.—At the quarterly meeting of the Court of the Worshipful Company of Plumbers, held at Guildhall on Friday last week, Mr. Frederick Machin was sworn into the office of Master, and Mr. Philip Wilkinson, F.R.I.B.A., and Mr. Charles Hudson, R.P., into the offices of Warden and Renter Warden respectively, for the ensuing year.

A Novel Cross-cutting Saw.—In some parts of the country, where saw-mills are not to be found, the labour required for cross-cutting timber logs is very considerable. A novel form of chain-saw, recently patented by Mr. M. J. Clark of Arizona, seems to be a most excellent appliance. It consists essentially of a bar, at one end of which is a head suitably contrived for engagement with the log. Part of the bar is screwed and formed with longitudinal grooves. Sliding on the plain end near the head is a block, having extended arms intended to move in the grooves. The block is suitably connected with a nut and hand-wheel, operating on the screw, and may thus be moved away from the head. Upon the top of the block is one end of a shaft to which is keyed a sprocket-wheel, whilst the other end is formed into a cranked handle. The saw-chain passes round both the log and the sprocket-wheel, being drawn taut when in position by aid of the hand-wheel and nut. Cross-cutting is then readily performed by turning the crank, and by adjusting the distance as work proceeds. The chain links have each two wheel cutters, and a chisel intended to remove material incised by the cutters.

Patent Trenching Machine.—Messrs. Cowley & Duxbury (Middleton) send an illustration and description of their patent trenching machine, which is a wood-working machine specially designed for all kinds of trenching, circular moulding, slot morticing, &c. They state that it will trench stair strings to any pitch or depth with or without wedging, the whole process being accomplished without any setting out whatever and in about the time it would take a joiner to set the work out in the ordinary way. In circular mouldings, either concave or convex, the wood to be operated on is fitted on a special table and the table revolves with it while the cutters operate on it so as to ensure mathematical correctness in the radius. The machine is known as Shurmer's Patent.

New Moulding and Tenoning Machine.—Messrs. Becker & Co. (agents for Kiessling's wood-working machinery) send us an illustration and description of a new single spindle moulding and tenoning machine, intended for workshops in which there is neither sufficient employment, room, nor power for a special tenoning machine. It can be used besides as a moulding machine for heavier and lighter work. For tenoning they use tenoning discs with changeable knives. For placing the wood to be worked a rolling table is bedded on a swinging arm, which allows the operator to follow up closely his work without reaching at arm's length, as with other machines. To the machine belong: complete countershaft for reverse motion, two tenoning discs (12 in. diameter), and a steel cutter. By taking off the discs it can be used as an ordinary moulding machine.

The Master Painters' Convention.—On the 3rd inst. the annual convention of the master painters of England was held at Hereford and was largely attended. This year's president is Mr. Vaughan, of Hereford, who delivered a presidential address dealing with the work and progress of the association and the position of decorative art in this country. He declared that in this respect England was still behind what she ought to be and had yet much to learn. They were suffering from the neglect of early training. The younger members of their craft must receive a thorough tuition. They must encourage the spread of technical education. The more able a man was to execute artistic work the more likely he was to have artistic work to do. To-day the public would have good work, not from any mere caprice, but simply from a love of the beautiful. They as an association should do their utmost to improve and educate themselves and those about them, and good results were sure to follow. The President went on to explain that in the north of England and the

Midlands the Association was exceptionally strong' but they would like more members in the east, west, and south of England. Dealing with labour questions he described strikes as a brutal way of settling disputes, and trusted that Boards of Conciliation would be the rule in future and not the exception.

UNIVERSITY COLLEGE LECTURES ON ARCHITECTURE.—"Building on Paper" is the title chosen by Professor Roger Smith for his public opening lecture at the commencement of the courses of lectures and classes at University College, Gower-street. This lecture will be given on Monday evening next, the 9th inst., at 7.30 p.m. Admission free, without tickets.

LANCASTER MASTER BUILDERS' DINNER.—On the 28th ult. the first annual dinner of the Lancaster and District Master Builders' Association was held at the King's Arms Hotel, the Mayor of Lancaster (Alderman W. Bell) presiding. Mr. Wright proposed "The Mayor," and expressed the hope that before long commencement would be made with the new Town Hall. The Mayor, responding, said the Corporation considered the works now in progress should be finished before commencing such a great work as a new Town Hall.—Mr. J. S. Roper proposed "The Association," which has seventy members. Mr. J. Hatch responded.

CAPITAL AND LABOUR.

HULL BUILDING DISPUTE.—A conference between the Hull Master Builders' Executive and representatives from the respective operative societies was held in the Builders' Exchange, Posterngate, on the 27th ult., under the presidency of Mr. W. G. Bray. The employers submitted new proposals for a settlement of the present dispute as under:—1. That all men return to work on the old rules. 2. That a joint board of conciliation be formed, consisting of an equal number of employers and employed, and that any difficulties, both present and future, shall be dealt with by such board prior to any stoppage of work. The board to be called together within forty-eight hours of any dispute occurring. It was mutually agreed that the proposed terms of settlement be forthwith brought before the members of each interested association, and a vote (for or against) taken.

PLASTERERS' STRIKE, NOTTINGHAM.—It is stated that as the result of a conference between representatives of the National Association of Master Builders and the National Association of Operative Plasterers, the plasterers of Nottingham, who have been on strike for a fortnight, have agreed to resume work. The strike arose through alleged infringements of the conditions discussed and arranged at the London Conference following the general lock-out of plasterers throughout the country. The terms of the present settlement definitely set forth that certain kinds of work shall in future be entrusted only to plasterers.

MEETINGS.

FRIDAY, OCTOBER 6.

Architectural Association.—Annual General Meeting. Address by the President, Mr. G. H. Fellowes Prynne, and distribution of prizes, exhibition of drawings and students' work. 7.30 p.m.

Sanitary Institute (Lectures for Sanitary Officers).—Mr. F. J. Waldo on "Public Health Statutes; Orders, Memoranda, and Model By-laws of the Local Government Board, and By-laws in Force in the Administrative County of London." 8 p.m.

SATURDAY, OCTOBER 7.

Sanitary Institute (Demonstrations for Sanitary Officers)—Inspection and Demonstration at Wimbledon Sewage Works. 3 p.m.

British Institute of Certified Carpenters.—Meeting at Carpenters' Hall. 6 p.m.

Sanitary Inspectors' Association.—Annual general meeting to receive the sixteenth annual report of the Council, &c. 5 p.m.

MONDAY, OCTOBER 9.

University College, London (Lectures on Architecture).—Public opening lecture by Professor T. Roger Smith. 7.30 p.m.

Sanitary Institute (Lectures for Sanitary Officers).—Dr. J. F. J. Sykes on "Objects and Methods of Inspection, Nuisances, &c." 8 p.m.

TUESDAY, OCTOBER 10.

Architectural Association.—Preliminary meeting of the School of Design. Addresses by Messrs. G. H. Fellowes Prynne, W. H. Seth-Smith, and H. Ricardo. 7.30 p.m.

Sheffield Society of Architects and Surveyors.—Annual Dinner.

WEDNESDAY, OCTOBER 11.

Sanitary Institute (Lectures and Demonstrations for Sanitary Officers).—(1) Inspection in the Parish of St. George's, Hanover-square, 2 p.m. (2) Professor A. Bostock Hill on "Trade Nuisances." 8 p.m.

FRIDAY, OCTOBER 13.

Glasgow and West of Scotland Technical (College Architectural Craftsmen's Society).—Professor Sexton on "Mild Steel." 8 p.m.

Sanitary Institute (Lectures for Sanitary Officers).—Dr. H. R. Kenwood on "Infectious Diseases." 8 p.m.

Architectural Association Discussion Section.—The first meeting of the session. A debate, on "The Registration of Architects," will be opened by Messrs. G. A. T. Middleton and A. R. Jemmett. 7 p.m.

RECENT PATENTS:

ACCEPTED SPECIFICATIONS.

Open to Opposition until November 27.

[1898] 15,792, Levavasseur, Electrical Motors. 17,587, Buffington, Miners', and other Lamps. 17,734, Drivet & Bilbie. 21,691, Van Praag & Harker, [1899] 13,924, Lacroix, 15,406, Bartmann, and 16,426, Hilberg, Generation of Acetylene Gas; see also [1899] 4,093. 19,607, Kerrill, Water-closet and other Cisterns for Ventilating the Apartments, and Apparatus for them. 19,867, Baker, Spike and Holdfast for Securing Rails, Decking, Platforms, &c. 19,886, Ryder, Means for Controlling Railway Trolleys, Lorries, and other Vehicles. 20,394, Holmes, Control of Electrical Circuits. 21,288, Wright, Water Softening and Purifying Apparatus. 21,941, Beaumont, Electricity Meter. 21,951, Ericson, Valve-cock. 22,242, Kiefer, Artificial Stone. 22,504, Silver & Co., Portable Shower-bath. 22,627, McGrouther, Clerk, & Robertson, Fire-proof Doors, Shutters, &c. 23,759, Cree, Brakes for Trolleys or Hand Trucks. 24,148, Hurst, Control of the Flow of Liquids under Pressure. 24,262, Noakes, Portable Endless Chain Telescopical Elevator. 24,466, Stewart & Wells, Electrical Arc Lamps. 24,786, Innes, Method of Casting the Buffer Holes in the Metal Pedestals of Water-closets. 25,323, Hulburd, Joint Rings for Pipes and Tubes. 27,489, Ladkin, Gate Fastener. [1899] 911, Stevens & White, Taps and Valves. 1,676, Treleaven, Windows. 2,218, Schmidt, Electrical Switch. 3,566, Atkin & Evans, Devices for Preventing the Rattling and Shaking of Sliding Window Sashes. 4,087 and 4,093, Sunderland and Marshall, Carbide Supply Holders and Acetylene Gas Generators and Lamps. 9,303, Vrooman, Fire-brick Arches, Crowns, or Roofs for Furnaces and Ovens. 9,406, Phelps, Locks and Latches. 9,487, Bundy, Time-recorders for Workmen and other Servants. 10,338, Dunlop, Method of Top Dressing for Wood Blocks for Streets, Footpaths, &c. 12,734, Lawson & Pitt, "Fire-iron." 12,993, Gage, Packages or Receptacles for Veneer-like Sheets or Boards. 13,202, Ziethen, Instrument for Describing Conic Sections and for Trisecting Angles. 14,011, Loeben & Toboldt, Pressure Devices for Use with Burners. 14,068, Coleman, Anti-fouling Coating for Wooden Submerged Structures. 14,222, Paul, Heating-Boilers. 14,685, Nauhardt, Varnishing Aluminium and other Metals. 14,713, Stevens & Knowles, Spark Arresters. 14,852, Griesemann, Brick-moulding Machines. 15,041, Bungard, Erection of Scaffolding. 15,340, Wiltzsch, Levels, Plumbrules, and Clinometers. 15,429, Dart & Crombie, Pipe Couplings. 15,505, Klebsch, Ventilators. 15,707, Williams, Gas or Vapour Heating Stoves and Ventilators. 15,734, Rueff, Fireproofing and Heat and Sound Insulating Compounds. 15,897, Gehle, Key-locks. 16,024, Clayton & Crump, Sash Pulleys. 16,679, Aiken, Combined Burner and Scraper for Removing Paint and Varnish. 16,822, Liebau, Fireproof Floors and Ceilings. 16,828, Mantle, Flue-cleaning Devices for Kitchen Ranges, &c. 16,965, Gude, Floorings, and Method of Laying them. 17 022, Rowe, Melting Glue.

ABSTRACTS OF PATENTED INVENTIONS.

12,247.—REGULATION OF GAS-SUPPLY: *J. & S. Coe*—The thermostat, which is devised for controlling the supply of gas to gas-heated boilers, has its valve mounted upon the end of a rod by a screw-cap whereby a small amount of play is provided, the rod being kept down by a spring and raised by a lever whose short end is pivotted to the end of another iron rod attached to an encased copper tube, the valve has an annular soft-metal seating, whose central opening forms a connexion between the supply tubes and the gas-feed.

12,250.—ACETYLENE GENERATORS: *G. für Heinzund Beleuchtungswesen.*—For an automatical supply of cartridges of calcium carbide when the gas-holder is nearly exhausted, the cartridges, of cylindrical shape, rest by means of their trunnions upon inclined rails, the sinking of a rod on the gas-holder's bell moves a lever and its stop, and so the first cartridge is allowed to run down the rails under the bell of the generator, but the second cartridge is prevented from rolling likewise; in a modification the gas-holder is surrounded by the generator, the spherical cartridges roll upon a helical incline, and a lever to regulate their delivery is moved by a weight hanging from the bell of the gas-holder and by a counterpoise.

12,253.—A LIQUID-SEAL GAS VALVE: *M. Gent, T. Lewin, & H. Smith (Executors of J. T. Gent).*—The level of mercury or other liquid is altered to control communication between two gas-ways, the liquid being placed in a chamber which opens into a larger chamber having a plunger which engages a diaphragm, and is moved by a spindle screwed into the casing's cap.

12,255.—PANTOGRAPHS: *E. G. Sjöstrand.*—Two wheels, joined by wires so that they shall turn together, are carried upon a bar which is adjustably clamped to an axis that turns in a heavy pedestal; to the wheels are clamped the pencil-arm and tracer-arm, whose effective length is proportionate to the two parts of the bar—that is to say, the ratio of the drawing to the copy. The pencil can be lifted from the paper by means of a bell-crank, lever, and spring.

12,292.—DRAIN AND SEWER PIPES: *H. W. Swain.*—The pipe, having a detachable socket, is made with a continuous flange at its end, and with projecting studs; a flange of the socket is so cut away that the socket may be threaded upon the pipe and turned round, whereby the studs bear against solid portions of socket-flange and the joint.

12,309.—VENTILATION TRAPS: *F. C. Keene.*—In the socket of a drum or sewer pipe is cemented a stoneware disc, and around a hole in the disc is formed a seating for a flap-valve, made preferably of a corrugated aluminium plate and inclined slightly in a vertical direction; the valve hangs from lugs which enter oblique open grooves with end pits at the aperature's top corners.

12,333.—HAND SAWS: *F. Zeinwoldt.*—In a ball and socket joint is mounted an axle on which are the ball bearings of the boss of the saw pulley, the axle's free end being adjusted by means of four set screws that pass through the sides of a fixed frame.

12,360.—SAFETY SUSPENDING APPARATUS: *J. P. Halket & J. Kennedy.*—A cross shaft on the bottom of the cage carries a keyed cam which engages with the guide, whilst the shaft bearings slide freely in guides against springs, the cams being retained in their places by means of a spring which acts upon a weighted lever upon the shaft; at a sudden acceleration of the cage's movement, the inertia of the cams and weighted levers causes the former to engage with the guides and so to stop the cage. In another form, the governor driven by the cage frees a weight, whose fall opens out a compressed spring that acts upon a lever on the shaft and by turning it puts the cams into play.

12,368.—SLIDING WINDOW SASHES: *J. Cook.*—For inwardly turning sashes cranked pins are pivoted in brackets on the stile, and can be turned to enter sockets in plates on the frame, the sockets are rounded, and rounded shields push back the pivot pins. In order to prevent accidents arising from the pins being out of position when the sash is sliding, the sash cord is fastened to a plate whose horns are slipped under a retaining plate on the sash stile, and a T-headed catch, passing through a slotted plate secured to the casing holds the inside bead or batten rod in its proper position. For purposes of cleaning, the upper sash can be drawn down within the frame, or bent pivots of the sash may enter socket plates inserted in the parting bead.

12,448.—SOFT METAL PIPING AND JOINTS: *Barraclough & Co. and Others.*—The pipe, of lead or other soft metal, and having woven wire or thin metal soldered or united or cast with the metal, is made either by passing the metal strip through a conical die and soldering the edges, or by casting around a core of block tin or a similar lining covered with some non-conductor. The joint includes a T-shaped piece, either cast or stamped, with a shoulder on the neck of the branch outlet or leg, or shoulders on the leg and the crosshead, solder being laid over the joint.

12,470.—A SEPARABLE HINGE JOINT: *B. Krassellt.*—The hinge, devised for the boxes of gas and water cocks, has two conically pointed pins that are pressed out to engage in recesses in the frame by the screwing down of a transverse screw. In another form balls are employed in place of pins, or a ball-pointed pin is screwed in from one side, and a ball is put at the other side.

12,514.—ALARMS AND INDICATORS FOR LIFTS: *A. Pope & A. B. Rayner.*—An electrical bell circuit is fitted on each landing so that the circuit (being normally open) is closed whenever the well gate is open, or is opened without the cage being there; when the gate is open a spring contact upon the gate contacts with a plate and closes the circuit, but with the approach of the cage, a non-conducting projection on the cage passes between spring contacts and opens the circuit; with the alarm circuit described may be combined the call circuit.

12,550.—PORTABLE FIRE ESCAPE: *T. P. Purcell.*—The ladder's telescopical section is extended by turning a winch, the rope passing around guide-pulleys fixed at the top of the main ladder and through a tubular tread at the bottom of the sliding ladder, the other sections are extended in the same manner, the rope-ends being joined to one of the ladders beneath. The ladders are raised by ropes that pass around rollers on the ends of a swinging frame under the main ladder, and are wound upon reels mounted on an axis on the turntable; the shaft moves the axis by means of bevel gearing, and toothed gearing, with a toothed segment on the turntable's periphery, move the turntable.

12,569.—STRAINER FOR WIRE FENCING: *J. & F. Ward.*—The wire is first passed through a hole in the straining post, thence through an eye in an iron bar, and is then tightened by turning the bar round by means of another bar through its eye, the wire's free end is twisted around the stretched portion to keep it from becoming slack.

12,686.—CRANES: *A. Grafton.*—A pinion, mounted at one end of the axle of the barrel adjusting the jib, gears with a second wheel which carries a dial with a pointer to indicate the jib's effective radius and the corresponding safe load. For portable cranes that run upon two rails o different gauges, the dials are fixed upon opposite sides of the second wheel.

12,804.—BRICK-MOULDING MACHINES: *S. J. & S. A. Pegg.*—Rotary shafts, carrying knives, feed the clay between rollers that are driven by spur wheels, the clay being forced through a mouthpiece or die on to the cutting-table. The knives may be fitted at each end of the shafts and be arranged to work in separate boxes, whose ends are slotted to receive the shafts, the upper parts of the slots being covered with plates.

12,839-41.—CAPS FOR INCANDESCENT LAMPS: *Siemens & Halske, Aktiengesellschaft.*—For connecting caps (12,839), two projections or depressions on opposite sides of the bulb neck engage with corresponding parts of the slit cap, which can be sprung on to the neck and secured with a spring ring. (12,840).—The bulb neck, oval or oblong in section, has recesses or projections along its greater diameter to engage, as above, with the cap, which is circular in section, and is compressed sideways when it is being put upon the bulb, but when released returns to its shape. (12,841).—The caps have small openings for lamps with necks of uniform size, to be secured without the use of cementing materials, whilst their remaining portions are formed in various shapes and sizes for different holders.

SOME RECENT SALES OF PROPERTY:

ESTATE EXCHANGE REPORT.

September 19.—By HOLLOWAY, PRICE, & SON (at Market Harborough).

East Langton, Leicester.—Freehold grazing land, 118 a. 0r. 31 p.	£6,028
September 20.—By HOLLOWAY, PRICE, & SON (at Welford).	
Newton, Warwick.—A freehold holding, 32 a. 0r. 35 p.	1,225
Newnham, Northants.—Newnham Hill Farm, 101 a. 2 r., f.	2,500
Yelvertoft, Northants.—Ivy House Farm, 45 a. 2 r. 28 p., f.	2,350
Five closes of pasture, 36 a. 0r. 22 p., f.	1,675
Welford, Northants.—Eight closes of arable, 48 a. 2 r. 28 p., f.	1,360
House, two cottages, and 5 a. 2 r. 14 p., f.	710
By T. MARTIN & SON (at Exeter).	
Exeter.—6 and 7, Eastgate, area 4,420 ft., f., r. 25*l.*	5,400
By STEPHENSON & ALEXANDER (at Newport).	
Nantyglo, Monmouth.—The Lion Tin Plate works, and brickworks, area 3 a. 2 r. 2 p., u.t. 81½ yrs., r. 250*l.* (including plant, machinery, &c.).	5,000
September 20, 21, 22.—By F. G. RICHARDS (at Whitchurch).	
Hodnet, &c., Salop.—A freehold and copyhold estate, comprising about 1,983 acres (in numerous lots)	72,577
September 21.—By ELLIOTT & SON (at Brighton).	
Brighton.—29, 31, and 33, Newmarket-rd., f.	800
13 and 15, Gladstone-pl., f.	920
74 and 76, Lincoln-st., f.	600
26, Norfolk-sq., f., r. 65*l.*	850

COMPETITIONS, CONTRACTS, AND PUBLIC APPOINTMENTS.

COMPETITIONS.

Nature of Work.	By whom Advertised.	Premiums.	Designs to be delivered.
*Infectious Diseases Hospital	Corp. of Bury	100*l.*; 50*l.*; and 25*l.*	Dec. 1

CONTRACTS.

Nature of Work or Materials.	By whom Required.	Forms of Tender, &c. Supplied by	Tenders to be delivered.
Tramway Reconstruction	Glasgow Corp.	J. Young, 88, Renfield-st. Glasgow	Oct. 10
Steel Rails, Fishplates, &c.	Birkenhead Corp.	C. Brownridge, C.E. Town Hall	do.
Two Houses and Shops, Victoria-rd. Exmouth	.....	P. Kerley, Archt. Exmouth	do.
Ironwork	India Office	E. G. Burls	do.
Bridewell and Offices, Chancery-st Dublin	Office of Public Works	H. Williams, Office of Works, Dublin	do.
Chapel, Harbertonford, near Totnes	.....	Mr. Barrons, Weir View, Totnes, Devon	do.
School, Bishop Sutton	.....	M. Froud, Archt. 1, St. Stephen's-st. Bristol	Oct. 11
Road Metal, Bedlington	Bedlingtonshire U.D.C.	Mr. Brown, Surv. Council Offices	do.
Cutting Track and Laying Pipes (12 miles), Hamilton, N.B.	Lanark C.C.	Leslie & Reid, C.E. 72a, George-st. Edinburgh	do.
Sewers, Sunniside	Chester-le-Street R.D.C	J. H. Mole, Surv. Council Offices	do.
Tools and Stores	Bengal-Nagpur Ry. Co	R. Miller, 132, Gresham-house, Old Broad-st. E.C.	Oct. 12
House, Store, &c. Ormeau-avenue	Belfast Corp.	Boro Surv. Town Hall	do.
Additions, &c. to Chapel, Longcross-street, Roath, Cardiff	.....	Lewis & Pocock, 13, Duke-st. Cardiff	do.
Pair of Houses, Denne-parade, Horsham	.....	W. Buck, Archt. Horsham	do.
Bridge, Ibthorp	Andover R.D.C.	J. Wormald, Surv. South Cottage, Andover	do.
Pier, Loch Pooltell, Skye	Inverness C.C.	G. W. Brenan, C.E. Oban	do.
Two Cottages, Woodside, Ryton	.....	E. Hawkins, Woodside House, Ryton	do.
Station, Car Shed, &c. Longroyd Bridge	Huddersfield Corp.	Boro Engr. 1, Peel-street, Huddersfield	Oct. 13
Boundary Walls, &c. Park-road	Great Harwood U.D.C.	R. Chippendale, Council Offices	do.
*Erection of School	Watford Sch. Bd.	W. H. Syme, 4, High-st. Watford	Oct. 14
*Supply of Building Bricks and Facing Bricks	Edinburgh and Leith Corp. Gas	Herring, Chief Engr. Newpt. Works	do.
*Tenders for Works, &c.	Morecambe Tower Co.	W. H. & A. Sugden, Cavendish-st. Keighley	Oct. 16
*Enlargement of Storing Reservoir	Corp. of Gt. Torrington	B. Latham, 13, Victoria-st. Westminster	do.
House, Sandygate, Kingsteignton, Devon	.....	S. Segar, Archt. Union-st. Newton Abbot	do.
House, Water, Bickington, Newton Abbot	J. Hougwill	do.	do.
Additions to Schools, Gascoigne-road	Barking Sch. Bd.	C. J. Dawson, Archt. East-street, Barking	do.
Twenty-one Houses	Newry (Ireland) U.D.C.	W. J. Watson, Archt. Newry	do.
Additions to Schools, Mellis, Suffolk	.....	Rev. T. H. Peat, The Rectory, Mellis	do.
Widening Bridge, Kirby Misperton, near Pickering	.....	W. Stead, C.E. Northallerton	Oct. 17
*Painting and Decorating Workhouse Dining Hall	Parish of St. Leonard, Shoreditch	F. J. Smith, Parliament Mansions, Victoria-street, S.W.	Oct. 18
Hospital, Horsley's Chase	King's Lynn Corp.	H. J. Weaver, C.E. Town Hall	do.
*Supply of Two Wielacy's Sanding Machines	Plumstead Vestry	Engineer, Vestry Hall, Maxey-rd. Plumstead	do.
Offices, &c. Savile-st. Sheffield	T. W. Ward	E. Winder, jun. Archt. Wharf-st. Sheffield	Oct. 19
Flint Gravel	Bishop's Stortford U.D.C.	Surv. Council Offices	Oct. 21
*Erection of Police Cottages	Cnty. of Southampton	W. J. Taylor, The Castle, Winchester	do.
Road Works, Grimsby	Dr. G. S. Stephenson	Grange & Wintringham, St. Mary's Chambers, Grimsby	do.

CONTRACTS—*Continued.*

Nature of Work or Materials.	By whom Required.	Forms of Tender, &c. Supplied by	Tenders to be delivered.
*Materials	G. W. Ry.	Office of Stores Supe. intendant, G. W. Railway, Swindon	Oct. 23
Fir Telegraph Poles and Creosoting	Postmaster General	C. E. Stuart, G.P.O. London, E.C.	do.
Plant for Light Railway	Barking Town U.D.C.	W. C. C. Hawtayne, Engr. 9, Queen St.-pl. E.C.	Oct. 24
Hospital Buildings, nr. Rush Green	Romford Joint Hosp Bd.	Mr. Whitmore, Archt. 17, Duke-st. Chelmsford	do.
Kerbing and Wood Paving	Dover T.C.	H. E. Stilgoe, C.E. Town Hall, Dover	do.
*Erection of Public Convenience	Sandgate U.D.C.	A. R. Bowles, Surveyor's Office, Sandgate	Oct. 26
*Retaining Walls and Foundations for New War Office	H.M. Works	Sir John Taylor, H.M. Office of Works, Storey's Gate, S.W.	Oct. 27
Extension of Harbour, Stonehaven, N.B.	.....	J. Barron, C.E. 1, Bon Accord-st. Aberdeen	Oct. 30
*Putting-down a Bore Tube and Lining same, &c.	Chipping Campden R.D.C.	N. Lailey, 16, Gt. George-st. Westminster	Oct. 31
*Erection of Higher Grade Board School	Brading Sch. Bd.	J. Newman, Thornton, Sandown	do.
School, Myton-on-Swale, Yorks.	.....	D. Cayley, Norton-grove, Malton	Nov. 1
Light Railway (70 miles) Port Elizabeth	Cape Govt.	Agent General, 112, Victoria-st. S.W.	Nov. 3
*Erection of New Coastguard Buildings at Banff	Works Dept. Admiralty	Work's Dept. Admiralty, 21, Northumberland-av. W.C.	do.
*Erection of New Coastguard Buildings at Padstow	do.	do.	do.
*Erection of New Female Staff Home, &c.	St. George's Union	E. T. Hall, 57, Moorgate-st. E.C.	Nov. 7
*Erection of School Buildings	Walthamstow Sch. Bd.	W. A. Longmore, Bridge-chmbrs. Hoe-st. Walthamstow	do.
*Erection of Girl's Dept. and New Assembly Hall	Enfield Sch. Bd.	G. E. T. Laurence, 181, Queen Victoria-st. E.C.	do.
Railway in Ceylon	Colonial Office	Crown Agents, Downing-st. S.W.	Jan. 4
Steam Laundry, Blackburn	.....	Stones & Stones, Archt. 10, Richmond-terrace, Blackburn	No date
Two Villas, Marlborough and Corbar-roads, Buxton	B. Wardle	Garlick & Flint, Archt. Terrace-rd. Buxton	do.
Business Premises, Lowther-street, Carlisle	Clark Bros. & Co.	T. Taylor Scott, Archt. 43, Lowther-st. Carlisle	do.
Congregational Church, Ilford	.....	J. D. & S. J. Mould, Archt. 52, Queen Victoria-street, E.C.	do.
Electric Lighting Works	Warsaw Municipality	Commercial Dept. Foreign Office, Whitehall, S.W.	do.
Houses, Rothbury	.....	Thos. Muckle, Rothbury	do.
Warehouse, Leeds	.....	W. Rusby, 25, Meadow-ln. Leeds	do.
Business Premises and House, Clay pit-lane, Leeds	H. Clarkson	Butler, Wilson & Co. Archt. 12, East-parade, Leeds	do.
Schoolhouse, Cardigan-rd. Leeds	Trustees	Corson & Jones, Archt. 25, Cookridge-street, Leeds	do.
C.I. Columns, Girders, &c. Leigh, Lancs.	Harrison, M'Gregor & Co.	J. C. Prestwich, Archt. Leigh	do.
Church Restoration, East Lulworth, Dorset	.....	Rev. R. Usher, East Lulworth Vicarage, Wareham	do.
*Erecting Six-roomed Houses in Brucegrove	.....	S. Ford, 3, South-square, Gray's Inn, W.C.	do.

PUBLIC APPOINTMENTS.

Nature of Appointment.	By whom Advertised.	Salary.	Application to be in.
*General Assistant	Cnty. Boro. of Salford	120*l.* per annum	Oct. 12
*Assistant	Cnty. Boro. of West Ham	130*l.* per annum	do.
*Building Inspector	Bor. of Tunbridge Wells	3*l.* per week	do.
*Draughtsman	Boro. of Keighley	.....	Oct. 14
*Assistant	N. E. Ry.	175*l.* per annum	no date

Those marked with an asterisk (*) are advertised in this Number. ***Competitions, p.*** iv.. ***Contracts, pp.*** iv. vi. viii. x. & xxi. ***Public Appointments, pp.*** xix. & xxi.

27 and 31, Bread-st., f. £740
4, Bond-st.-row, f. 270
11, Kingsbury-st., f. 325
32, Baker-st., f. 655
3, Livingstone-rd., f. 355

Preston, Sussex.—Beaconsfield-villas, Glendale, f., e.r. 45*l.* 640
14, Clyde-rd., f., e.r. 32*l.* 560

Ditchling, Sussex.—South Mead Farm, 5 a. 3 r. 6 p., f. 550

By W. Watson & Son & Morris, Son, & Peard (at Alfreton).

Shirland, Derby.—A freehold holding, 11 a. 0 r. 11 p. 1,000
Two houses, cottages, and 1 a. 0 r. 23 p., f. 1,350
Twenty houses, two cottages and blacksmith's shop, f. 3,326
Various closes of land, 27 a. 0 r. 39 p., f. 1,482
Shirland House, farm, and 49 a. 2 r. 24 p., f. 1,800

Stonebroom, Derby.—Stonebroom Farm, 89 a. 3 r. 4 p., f. 2,205
Various enclosures, 23 a. 0 r. 30 p., f. 1,202
A freehold house and 0 a. 1 r. 39 p. 194
Three freehold cottages 300
Eleven plots of building land, f. 278

By David Burnett & Co. (at Portmadoc).

Llanbedr, Merioneth.—The "Victoria" Inn, f. .. 2,700
The Old Post Office and two houses and shop adjoining, f. 1,020
Main rd., &c., nineteen plots of building land, f. 1,720
Main rd., &c., f.g.r.'s 21*l.* 13s., reversions varying from 13 to 56 yrs. 990
A freehold corn mill and 8 a. 2 r. 14 p. 700
Tyn-y-Ddol and 1 a. 3 r. 12 p., f. 240
Rhw House and three cottages adjoining, f. 395
Pen-y-Bont Farm, 75 a. 0 r. 37 p., f. 3,050
Tynllan and 6 a. 1 r. 18 p., f. 550
Ty-Mawr Farm, 18 a. 2 r. 25 p., f. 1,450
Cae'r-Clochydd and 5 a. 2 r. 26 p., f. 420

Llandanwg, Merioneth.—Erw Wen Farm, 204 a. 1 r. 16 p., f. 1,650

Llanfair, Merioneth.—Pen'rallt Farm, 94 a. 1 r. 23 p., f. 1,800
Argoed Farm, 61 a. 1 r. 6 p., f. 2,350

Llandecwyn, Merioneth.—Five freehold farms, 1,241 a. 0 r. 31 p. 14,550

Two small holdings, 28 a. 0 r. 30 p., f. £800

Llanbedr, Merioneth.—Two freehold cottages and 13 a. 1 r. 6 p. 360

Llanenddwyn, Merioneth.—Three freehold farms, 95 a. 3 r. 12 p. 1,265
Two freehold cottages and 11 a. 2 r. 10 p. 400

By Baxter, Payne, & Lepper (at Bromley).

Bromley, Kent.—Alma-grove, six villa residences, u.t. 96 yrs., g.r. 30*l.*, r. 170*l.* 1,350
54, 56, 76 to 82 (even), Martin's-rd., u.t. 80 yrs., g.r. 25*l.* 10s. 715

By C. C. & T. Moore.

Hackney.—16 and 43, Churchill-rd., f. 805
Homerton.—54 and 68 Brooksby's Walk, f. 1,190
Bow.—17, Alfred-st., u.t. 47 yrs., g.r. 12*l.* 10s., e.r. 50*l.* 400

By F. J. Staines.

Bethnal Green.—9, Totty-st., u.t. 33 yrs., g.r. 3*l.* 3s. 155
7, 8, and 9, New Tyson-st., u.t. 50 yrs., g.r. 16*l.* 10s. 900

Limehouse.—18 and 24, Thomas-st., u.t. 62 yrs., g.r. 4*l.* 520
Bow.—41 and 42, Arnold-rd., u.t. 74 yrs., g.r. 6*l.* .. 300
Mile End.—Garden-st., f.g.r. 15*l.*, reversion in 43 yrs. 325
Walthamstow.—71 to 81 (odd), Clarkson-rd., f. .. 915
Homerton.—7 to 12, Crozier-ter., u.t. 62 yrs., g.r. 15*l.* 870

September 22.—By Biscoe & Biscoe.

Dulwich.—9, Hinckley-rd., u.t. 69 yrs., g.r. 7*l.*, r. 30*l.* 250

By Hards & Bradley.

Plumstead, Kent.—Church Manor Way, freehold building land, 8 a. 3 r. 10 p. 690
Deptford.—25, Watson-st., f. 200
Battersea.—28, Bolan-st., u.t. 79 yrs., g.r. 6*l.* 6s., r. 34*l.* 325

By Messrs. Kemsley.

South Woodford.—4, 5, 6, and 7, Florence-ter., u.t. 82¾ yrs., g.r. 18*l.* 525
1 to 5, Maybank-ter., u.t. 82 yrs., g.r. 21*l.* 18s. 675

By Rider & Sons.

Notting Hill.—4, 5, and 6, Latimer Mews, u.t. 64 yrs., g.r. 12*l.* 300
26 and 28, Blechynden-st., u.t. 64 yrs. r. 7*l.* .. 495

September 25.—By Climpson & Johnson.

Tooting.—2, Winslade Villas, u.t. 98 yrs., g.r. 6*l.* 6s. £330

By Thomas, Peyer, & Miles.

Newtown, Montgomery.—The Crown Brewery, with twenty-two public and beer houses attached, f. and l. 29,725

By R. S. Benson (at Darlington).

Darlington.—Coniscliffe-rd., Belle Vue, f. 2,000
Cleveland Parade, a plot of land, f. 100
Haughton Back-lane, Prospect House Farm, 109 a., f. and c. 4,350
Salter's-lane, &c., a freehold brickyard, 9 a. 0 r. 12 p. 490
Harrowgate, four plots of land, 2 r. 32 p., f. 120
Harrowgate, Drinkfield farm, 35 a. 3 r. 32 p., f. 2,550
Harrowgate, &c., various enclosures, 66 a. 1 r. 18 p., f. 3,635
Lowson-st., three building plots, f. 185
Crosby-st., three freehold cottages 265
14, Upper Archer-st., and 28, Archer-st., f. 215

September 26.—By C. H. Brown.

Pimlico.—14A and 15A, Johnson's-pl., u.t. 25 yrs., g.r. 16*l.*, r. 100*l.* 600
73, Pulford-st., u.t. 38 yrs., g.r. 1*l.*, e.r. 65*l.* .. 460

By Butler & Horder.

Marylebone.—10, North-st., u.t. 22 yrs., g.r. 10*l.*.. 310

By J. A. Lumley & Co.

Kentish Town.—63, Highgate-rd., f., r. 55*l.* 800

By Beale & Capps.

Paddington.—41, 42, 44, 46, and 48, Warlock-rd., u.t. 64 yrs., g.r. 35*l.*, r. 200*l.* 1,955
28, Oakington-rd., u.t. 63 yrs., g.r. 7*l.*, r. 40*l.* .. 445
Westbourne Park.—9, Kensal-rd., u.t. 68 yrs., g.r. 7*l.* 265
Kilburn.—9, Princess-rd., u.t. 59 yrs., g.r. 6*l.*, r. 32*l.* 300
Gunnersbury.—Thorney Hedge-rd., six plots of land, f. 795

By C. W. Davies & Son.

Tottenham.—213 to 231 (odd), St. Ann's-rd., u.t. 69½ yrs., g.r. 40*l.* 2,190
1 to 10, Henry-rd., u.t. 69½ yrs., g.r. 40*l.* 1,440
Pimlico.—74, Ebury-st., u.t. 23½ yrs., g.r. 8*l.*, r. 120*l.* 1,200

Finsbury Park.—87, Finsbury Park-rd., u.t. 67 yrs., g.r. 9*l.* 9s., r. 43*l.* £435
By EDWARD BOND (at Thame).
Askett, Bucks.—Askett Farm, 123 a. 0 r. 28 p., f. and c. 3,925
Thame, Oxon.—High-st., a freehold residence and two houses adjoining 1,340
By BARKER, CATHIE, & FINCH (at Masons' Hall Tavern).
Weybridge, Surrey.—High-st, the "Ship" Hotel, f., with goodwill 7,510
September 27.—By J. BOTT & SONS.
Brixton.—66, Saltoun-rd., u.t. 73½ yrs., g.r. 6*l.* 6s., r. 40*l.* 345
12, Kellett-rd., u.t. 73 yrs., g.r. 7*l.* 5s., r. 40*l.* .. 380
By Messrs. CRONK.
Sevenoaks, Kent.—South Pk., Red Cottage, and 3 r. 34 p., f. 2,860
Sundridge, Kent.—Four enclosures of land, 8 a. 2 r. 39 p., f. 640
By FELTHAM, WOODROW, & CO.
Stoke Newington.—148, Osbaldeston-rd., u.t. 81 yrs., g.r. 9*l.*, e.r. 55*l.* 680
By INMAN & CO.
Kilburn.—1 and 2, Chichester-ter., u.t. 58 yrs., g.r. 12*l.*, r. 90*l.* 700
By WAGSTAFF & SONS.
Bethnal Green.—James-st., c.g.r. 9*l.* 15s., reversion in 37 yrs. 285
Highbury.—55 and 57, Ronalds-rd., u.t. 82½ yrs., g.r. 15*l.* 12s. 8d., r. 90*l.* 840
By WILTSHIRE & THURGOOD.
Lee.—88, Burnt Ash-rd., u.t. 64 yrs., g.r. 8*l.*, e.r. 45*l.* 300
By R. TIDEY & SON.
Hoxton.—38 and 40, De Beauvoir-cres., u.t. 19 yrs., g.r. 6*l.* 16s. 6d., r. 130*l.* 950
42 and 44, De Beauvoir-cres., u.t. 21 yrs., g.r. 7*l.* 7s. 820
De Beauvoir Town.—44 and 46, De Beauvoir-rd., u.t. 34 yrs., g.r. 10*l.*, r. 105*l.* 1,050
Hackney.—100, King Edward's-rd., u.t. 40 yrs., g.r. 7*l.*, r. 46*l.* 440
By DOUGLAS YOUNG & CO.
Clapham.—13, Macauley-rd., u.t. 73 yrs., g.r. 10*l.*, e.r. 70*l.* 500
By HEPPER & SONS (at Leeds).
Leeds.—Woodhouse-la., Woodhouse Lodge," area 7,473 yds., f. 5,000
Chapeltown-rd., Terrace House, area 4,070 yds., f. 1,855
By WYATT & SON (at Chichester).
Chichester, Sussex.—4, St. John-st., and the City Saw Mills adjoining, f. 1,900
East-st., a freehold house, r. 20*l.* 350
Snag's-la., a plot of land, with buildings thereon, f. 400
September 28.—By ARTHUR BARTON.
Lee.—Wantage-rd., the gables, u.t. 80 yrs., g.r. 6*l.* 6s. 700
By LEVENS, SON, & HOARE.
Bromley, Kent.—London-rd., f.g.r. 36*l.*, reversion in 61½ yrs. 1,085
Sydenham.—49, 51, and 53, Kent House-rd., u.t. 64 years, g.r. 24*l.*, r. 82*l.* 500
By LINNETT & LANE.
Kentish Town.—39, Spencer-rd., f., r. 32*l.* 520
By BROWETT & TAYLOR.
East Ham.—45 to 63 (odd), Talbot-rd., u.t. 81 yrs., g.r. 30*l.*, r. 182*l.* 1,040
Mile End.—102 to 108 (even), Devonshire-st., u.t. 80 yrs., g.r. 70*l.* 390
By STIMSON & SONS.
Bermondsey.—57, 59, and 61, Cranham-rd., u.t. 57 yrs., g.r. 4*l.* 17s. 6d. 900
67 to 73 (odd), Barkworth rd., u.t. 70½ yrs., g.r. 20*l.* 860
4 and 6, Catlin-st., u.t. 48 yrs., g.r. 9*l.* 545
Fulham.—11 and 13, Rigault-rd., u.t. 78½ yrs., g.r. 11*l.*, r. 54*l.* 555
Brixton.—31 and 33, Tintern-st., u.t. 75½ yrs., g.r. 12*l.* 12s., r. 58*l.* 555
Brighton-ter., i.g.r's. 36*l.*, u.t. 10½ yrs., g.r. nil.. 265
108, Upper Tulse-hill, u.t. 21½ yrs., g.r. 10*l.*, r. 85*l.* 385
Forest Hill.—Dalmain-rd., f.g.r. 20*l.*, reversion in 64½ yrs. 500
Poplar.—7, 9, and 11, Pennyfields, c., r., 78*l.* 670
Croydon.—117, White Horse-rd., u.t. 60 yrs., g.r. 8*l.* 600
By J. A. & W. THARP.
Dalston.—1 to 33 (odd), Suffolk-rd., u.t. 46 yrs., g.r. 51*l.* 4,330
Hackney.—15, Ellingfort-rd., and l.g.r. 10*l.*, u.t. 58 yrs., g.r. 6*l.* 495
10 to 16 (even), 21 to 35 (odd), Ellingfort-rd., u.t. 58 yrs., g.r. 36*l.* 4,115
Ellingfort-rd., Neville House and Fort House, u.t. 58 yrs., g.r. 4*l.* 595
26 to 32 (even), 33, 38, and 39, Trelawney-rd., u.t. 62 yrs., g.r. 22*l.* 10s. 2,050
39, King Edward-rd., u.t. 26 yrs., g.r. 8*l.* 10s., r. 60*l.* 600
September 29.—By DAVID BURNETT & CO.
Walthamstow.—Cromer-rd., f.g.r. 16*l.* 16s., reversion in 90 yrs. 420
By E. & S. SMITH.
Canonbury.—13, Ashby-rd., u.t. 46 yrs, g.r. 10*l.* r. 50*l.* 570
Hendon.—High-rd., Clarendon and Mayville Villas, u.t. 73 yrs., g.r. 11*l.*, r. 85*l.* 1,040
By F. WARMAN.
Barnsbury.—4, Barnsbury-ter., u.t. 43 yrs., g.r. 6*l.* 10s., e.r. 45*l.* 525
By DAVID J. CHATTELL.
Whitechapel.—45 and 46, Union-st., f. 1,560
St. Luke's.—33, Gee-st., f., r. 30*l.* 450
Kentish Town.—16, Lewis-st., u.t. 62 yrs., g.r. 5*l.* 245
New Eltham, Kent.—Green lane, Tom's Croft, 4 a. 0 r. 5 p, f. 1,590
Eltham, Kent.—Foots Cray-rd., Halons and Barley Barn meadows, 9 a. 0 r. 1 p., f. 2,140
Southend, Bean Hough enclosure, 4 a. 2 r. 28 p., f. 235

Contractions used in these lists.—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; e.r. for estimated rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; yd. for yard, &c.

PRICES CURRENT OF MATERIALS:

WOOD.*

Per Petersburg standard hundred.

	£ s. d.	£ s. d.
White Sea: first yellow deals	17 5 0	18 5 0
Second do.	13 10 0	15 0 0
Third do.	11 15 0	13 0 0
Battens, 40s., 30s., and 15s. less respectively.		
Petersburg: first yellow deals	14 0 0	16 10 0
Second do.	11 0 0	12 10 0
Battens, 30s. and 20s. less respectively.		
Petersburg, white deals	10 0 0	12 0 0
Do. white battens	8 15 0	10 5 0
Riga, white deals	8 10 0	9 10 0
Swedish mixed yellow deals	13 10 0	17 0 0
Third do.	12 10 0	15 0 0
Fourth do.	11 0 0	12 0 0
Fifth do.	10 0 0	11 0 0
Battens, 30s., 20s., and 10s. less respectively.		
Whitewood, 10 to 20 per cent. less.		
Finnish unsorted yellow deals	10 0 0	10 10 0
Battens, 10s. and 5s. less respectively.		
Whitewood, 5 to 10 per cent. less.		
Norwegian second yellow battens	7 10 0	8 0 0
Third do.	7 0 0	7 10 0
Fourth do.	6 10 0	7 0 0
Whitewood, 10s. less.		
Danzig, Crown Deck deals, per 40 ft. 3 in.	0 15 0	1 5 0
Brack	0 12 0	1 0 0
St. Lawrence Pine deals, &c., per P.S.H.:—		
1st, Bright and Dry, regular sizes	20 15 0	27 5 0
" " oddments	13 15 0	20 10 0
2nd " regular sizes	15 15 0	19 0 0
" " oddments	11 5 0	14 15 0
3rd " regular sizes	9 15 0	11 5 0
" " oddments	8 5 0	9 5 0
4th " regular sizes	8 0 0	8 15 0
" " oddments	7 5 0	8 0 0
St. Lawrence Spruce deals, &c.		
First, regular sizes	9 0 0	11 0 0
Second "	7 15 0	8 15 0
Third "	7 10 0	8 5 0
Fourth "	6 10 0	7 5 0
Oddments and battens at 20s., 10s., 7s. 6d., and 5s. less respectively.		
New Brunswick Spruce deals, &c.	7 10 0	8 5 0
Oddments, battens, and fourths	6 15 0	7 15 0
United States pitch pine planks and boards	8 15 0	12 5 0
Prepared Boards, per square		
1¼ by 6½ and 7 in. 1st yellow	11 0	15 6
" " 2nd "	7 0	11 3
1 by 6½ and 7 in. 1st "	10 3	11 9
" " " white	8 0	10 3
" " 2nd yellow	8 0	10 3
" " " white	6 3	8 0
⅞ by 6½ & 7 in. 1st & 2nd yellow	7 9	8 9
" " " white	7 0	8 3
⅞ by 6½ and 7 in. 1st yellow and white (grooved, tongued, and beaded)	7 9	8 6
⅞ by 6½ and 7 in. 2nd yellow and white (ditto)	7 3	8 0
⅝ by 6½ and 7 in. 1st yellow and white (ditto)	5 9	6 9
⅝ by 6½ and 7 in. 2nd yellow and white (ditto)	4 9	5 9
Narrower widths at 10 per cent. less.		
3rd quality at 15 per cent. less than 2nd.		
Danzig and Memel Fir Timber— per load		
Best middling	3 0 0	3 5 0
Good middling and Second	2 10 0	3 0 0
Common middling	2 5 0	2 10 0
Undersized	2 5 0	2 15 0
Swedish and Norwegian Balks	2 5 0	2 10 0
Baltic Oak Timber—		
Danzig and Stettin—Large	3 0 0	3 10 0
Small	1 15 0	2 0 0
Quebec Timber per load		
Yellow Pine	5 0 0	6 15 0
Oak	4 2 6	6 0 0
Elm	4 12 6	5 5 0
Ash	3 15 0	4 15 0
Birch	2 12 6	4 10 0
New Brunswick, &c., Birch	1 10 0	2 2 6
American Pitch Pine Timber	3 7 6	3 17 6
Wainscot, per log, 18 cubic ft.—		
Crown (Eng. & Dutch) nominal	3 17 6	5 10 0
Brack nominal	3 2 6	4 2 6
Lathwood, per cubic fathom—		
Petersburg	4 0 0	6 10 0
Riga and Danzig	4 10 0	5 10 0
Norway Poles, per ft. run	0 0 1	0 0 1½
Oak Staves, per mille full size pipe		
Memel, Crown	210 0 0	220 0 0
Brack	180 0 0	190 0 0
Danzig	165 0 0	175 0 0
Bosnia, single Barrel (nominal)	28 0 0	30 0 0
United States, Pipe	35 0 0	42 10 0
Hogshead, extra heavy and double extra	27 10 0	32 10 0
Indian Teake per load	11 10 0	16 10 0
British Guiana Greenheart	0 0 0	8 0 0
Mahogany, per foot superficial—		
Honduras, cargo average	0 0 4½	0 0 6
Nicaragua, do.	0 0 4½	0 0 5½
Tabasco, do.	0 0 4	0 0 6½
Mexican, do.	0 0 3½	0 0 4
Panama, do.	0 0 3	0 0 4
African, do.	0 0 3½	0 0 5
Cuba, do.	0 0 5½	0 0 7½
St. Domingo, do.	0 0 5	0 0 7
Do. Curls (good to prime)	0 0 9	0 1 3
Walnut, American (logs)	0 2 3	0 4 6
Do. do. (planks and boards)	0 2 0	0 7 6
Italian, per foot superficial	0 0 3	0 0 7½
Black Sea, per ton	6 0 0	12 0 0
Satin Walnut (logs) per foot cube	0 1 0	0 1 3
" (planks and boards)	0 2 0	0 2 9

* The prices named are for the wood as imported and landed in the docks. Ten per cent., approximately, should be added in order to arrive at the current trade prices

PRICES CURRENT—*continued.*

	£ s. d.	£ s. d.
Sequoia (Californian redwood), per foot cube	0 1 9	0 2 0
Whitewood, American (logs)	0 1 3	0 1 6
" " (planks and boards)	0 1 6	0 2 9
Quartered oak " " "	0 2 3	0 4 0
Kauri pine (logs)	0 1 9	0 2 0
" " (planks)	0 2 3	0 2 9
Jarrah (planks)	0 2 3	0 2 6
Lancewood spars each, fresh and large	0 5 0	0 8 0
Lancewood spars, ordinary to fair	0 4 0	0 5 0
Degame spars	0 8 0	0 10 6

METALS.

IRON—Pig, in Scotland ton	3 7 3	0 0 0
Bar, Welsh, in London	6 0 0	6 5 0
Do. do. at works in Wales	5 15 0	5 17 6
Do. Staffordshire, in London	6 5 0	7 10 0
COPPER—British cake and ingot	80 0 0	80 10 0
Best selected	80 15 0	81 15 0
Sheets, strong	84 0 0	86 0 0
Chili bars	75 11 3	0 0 0
YELLOW METAL lb.	6½d.	7¼d.
LEAD—Pig		
Spanish ton	16 10 0	0 0 0
English Com. Brands	16 15 0	0 0 0
Sheet, English, 6 lbs. per sq. ft. and upwards	17 15 0	0 0 0
Pipe	18 5 0	0 0 0
ZINC—English sheet ton	27 0 0	0 0 0
Vieille Montagne	28 0 0	0 0 0
Spelter	22 2 6	22 5 0
TIN—Straits	145 15 0	0 0 0
Australian	146 0 0	146 10 0
English Ingots	148 10 0	149 0 0
Banca	0 0 0	0 0 0
Billiton	0 0 0	0 0 0

OILS.

Linseed ton	22 5 0	0 0 0
Cocoanut, Cochin	29 5 0	0 0 0
Do. Ceylon	25 15 0	0 0 0
Palm, Lagos	24 0 0	0 0 0
Rapeseed, English, pale	25 0 0	0 0 0
Do. Brown	23 10 0	0 0 0
Cottonseed ref.	17 15 0	18 15 0
Oleine	17 5 0	19 0 0
Lubricating U.S.	0 5 9	0 7 9
Do. Black	0 5 0	0 6 0
TAR—Stockholm barrel	1 6 6	0 0 0
Archangel	1 0 0	0 0 0
Turpentine	37 0 0	0 0 0

TO CORRESPONDENTS.

W. A. (Amounts should have been stated).—W. H. T. (Below our limit).

NOTE.—The responsibility of signed articles, letters, and papers read at public meetings, rests, of course, with the authors.

We cannot undertake to return rejected communications.

Letters or communications (beyond mere news items) which have been duplicated for other journals are NOT DESIRED.

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TENDERS.

[Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than* 10 *a.m. on Thursdays.* N.B.—We cannot publish Tenders unless authenticated either by the architect or the building-owner; and we cannot publish announcements of Tenders accepted unless the amount of the Tender is given, nor any list in which the lowest Tender is under £100, unless in some exceptional cases and for special reasons.]

* Denotes *accepted.* † Denotes *provisionally accepted.*

BELFAST.—For laying water main, Knockbracken (second section), for the City and District Water Commissioners. Mr. L. L. Macassey, C.E., Westminster and Belfast:—

Patterson & Son, Ltd.	£13,034 19 5	Lanerty & Sons, Belfast*	£9,121 0 0
H. & J. Martin, Ltd.	10,734 0 0	J. Hemmingway	7,765 0 0
Fisher & Lefanu	10,298 6 0		

BLACKBURN.—Accepted on a schedule of prices, for the execution of street works, Francis-street and others, for the Corporation. Mr. W. Stubbs, C.E., Municipal Offices, Blackburn:—

Francis-street and Charnley-street.

Chadwick Bros., 39, Maple-street, Blackburn.

Back road behind Nos. 18 to 92, Beardsworth-street.

Dewhurst & Hindle, 16, Ripon-street.

Back roads behind Nos. 32-46, Cumberland-street, and Infirmary-street.

[The Corporation will do the work in Crabtree-street themselves.]

BOURNEMOUTH. — For providing and fixing Lancashire boiler, capable of evaporating 4,000 lbs. water per hour, including forced draught, &c., and other works in connexion therewith, for the Borough of Bournemouth. Mr. F. W. Lacey, Borough Engineer and Surveyor:—

John Thompson	£1,075 0 0	Goddard, Massey, & Warner, Ltd., Nottingham*	£731 18
Babcock & Willcox	858 0 0		
E. Danks & Co., Ltd.	835 0 0		

CORK.—For additions to Fermoy House. Messrs. W. H. Hill & Son, architects, 28, South Mall, Cork:—

Denis Creedon, Fermoy* £262

[*See also next page*

GOREY (Ireland).—For additions, &c., to workhouse, for the Guardians. Mr. B. W. Webster, architect, Gorey :—

W. Fortune ..	£1,300 0 0	John Byrne, Gorey*	£994 17 6
F. A. Mellon ..	1,100 0 0		

HALLWILL (Devon).—For the erection of a cottage hospital, near the railway station. Mr. C. F. A. Voysey, architect, 6, Carlton Hill, London, N.W. :—

J. Northcott	£2,500 0	Wm. Wiffin	£2,245 0
J. A. Beckley ..	2,492 0	Marwood White	2,215 5
Ellis & Son	2,372 0		

HINDLEY (Lancs.).—For relaying 15-inch main sewer, for the Urban District Council. Mr. A. Holden, C.E., Council Offices, Hindley :—
Cowburn & Sons, Hindley* £223 8

LEVENSHULME (Lancs.). — For the erection of stores, shed, &c., for the Urban District Council. Mr. J. Jepson, surveyor, 8A, Tiviot-dale, Stockport :—
J. Swallow, Barlow-road, Levenshulme £130

LONDON.—For decorative works at No. 255, Camden-road, N.W., for Mr. Benjamin Benwell. Messrs. Clark & Hutchinson, architects, 28, John-street, Bedford-row, W.C. :—

Hayward & Son	£198	Selway & Sons*	£93
Bruton & Son	165		

MALDON (Essex).—For the construction of brick and concrete reservoirs, &c., for the Rural District Council. Mr. H. G. Keywood, C.E., 6, Market-hill, Maldon. Quantities by engineer :—

H. Weldon ..	£1,566 13 11	West, Chelmsford*	£1,391 0 0
Ketteringham	1,487 0 0		

[Engineer's estimate, £1,200.]

SOWERBY BRIDGE.—For the erection of Baptist school and alteration of chapel. Messrs. Sutcliffe & Sutcliffe, architects, Albert-street, Hebden Bridge. Quantities by the architects :—

Masonry.—Thomas Wild, Luddenden Foot* .....
Joinery.—Greenwood & Blackburn, Hebden Bridge* .....
Plumbing, &c.—Albert Farrar, Sowerby Bridge* .....
Slating and Plastering.—Tom Dyson, Sowerby Bridge* ..... } £711

TIPTON (Staffs.).—For the erection of cart-sheds, walls, &c., Workhouse-lane, for the Urban District Council. Mr. W. H. Jukes, Surveyor, Public Offices, Tipton :—

J. Sisman	£225	J. Gittings, Bloomfield*	£175

[Surveyor's estimate, £175 10s.]

UPTON LOVELL (Wilts). — For rebuilding the Woollen Cloth Mills recently destroyed by the fire, for the Upton Lovell Manufacturing Company. Mr. Walter W. Snailum, architect, Trowbridge. Quantities by the architect :—

	Block A.	Block B.	Block C.	Total.
	£	£	£	£
C. A. Hayes.....	2,550 0	895 0	759	4,204
Hayward & Wooster	2,000 0	839 0	660	3,499
G. Moore	2,016 10	799 10	626	3,442
Architect's estimate..	2,039 0	855 0	668	3,562

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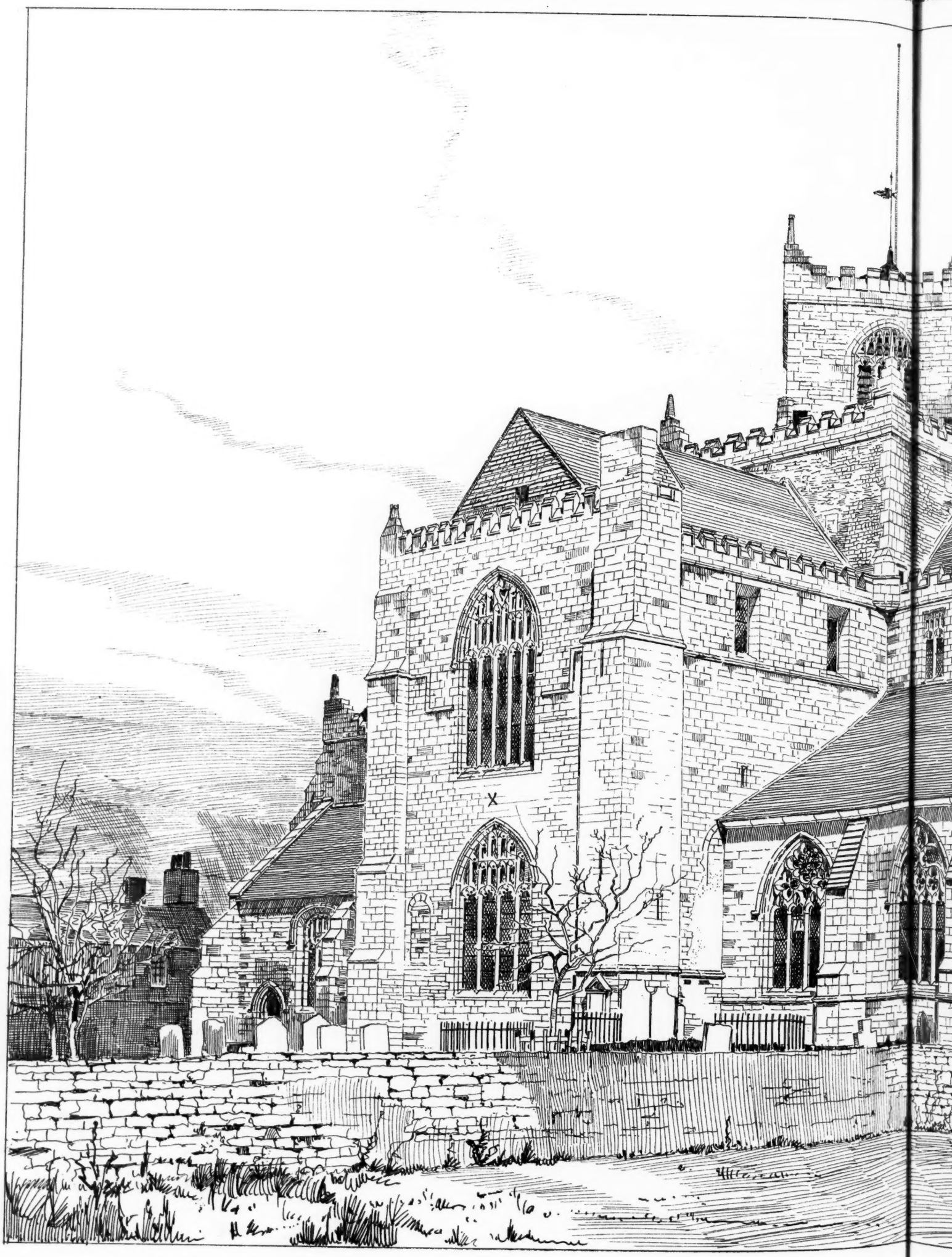

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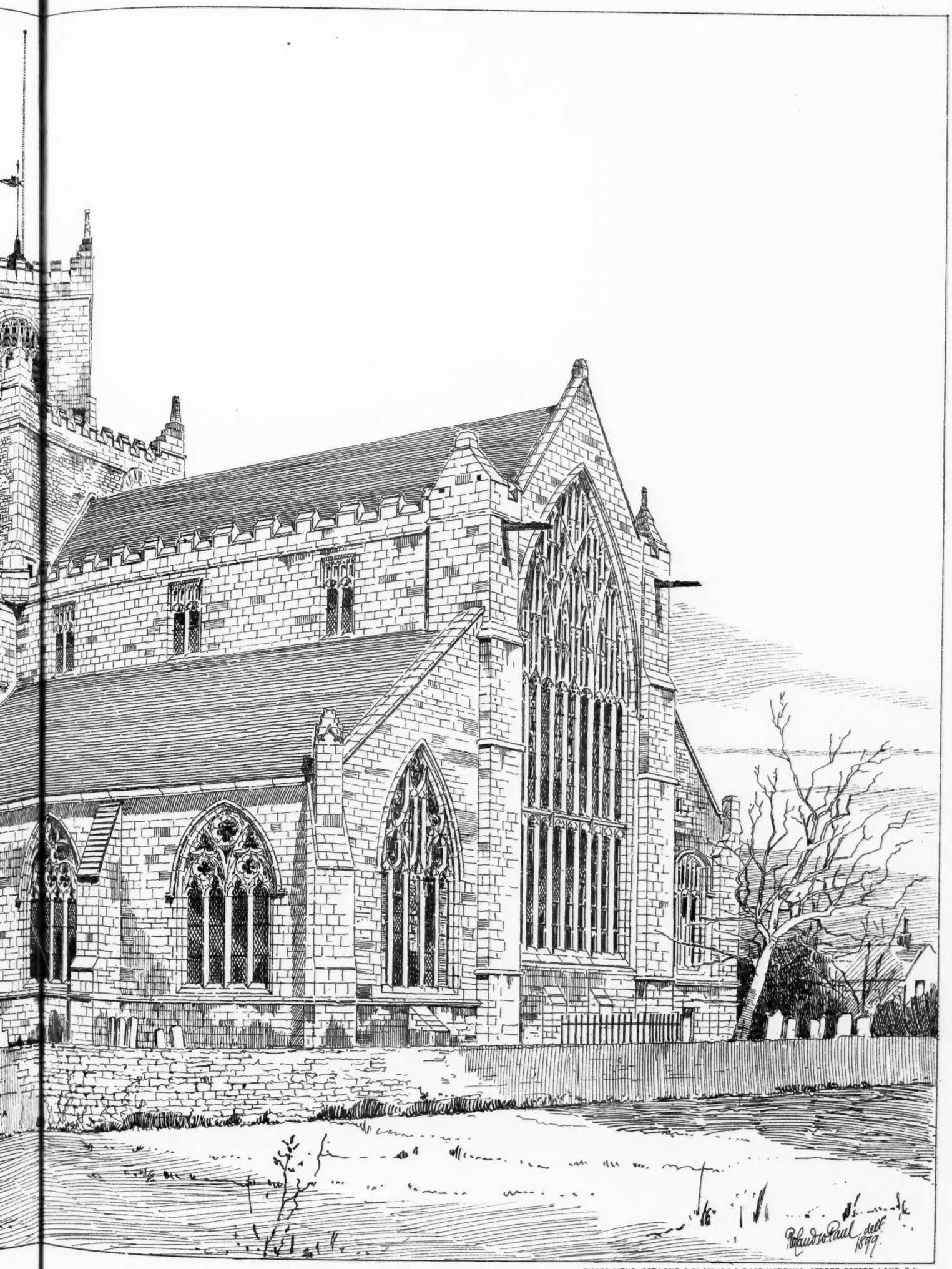

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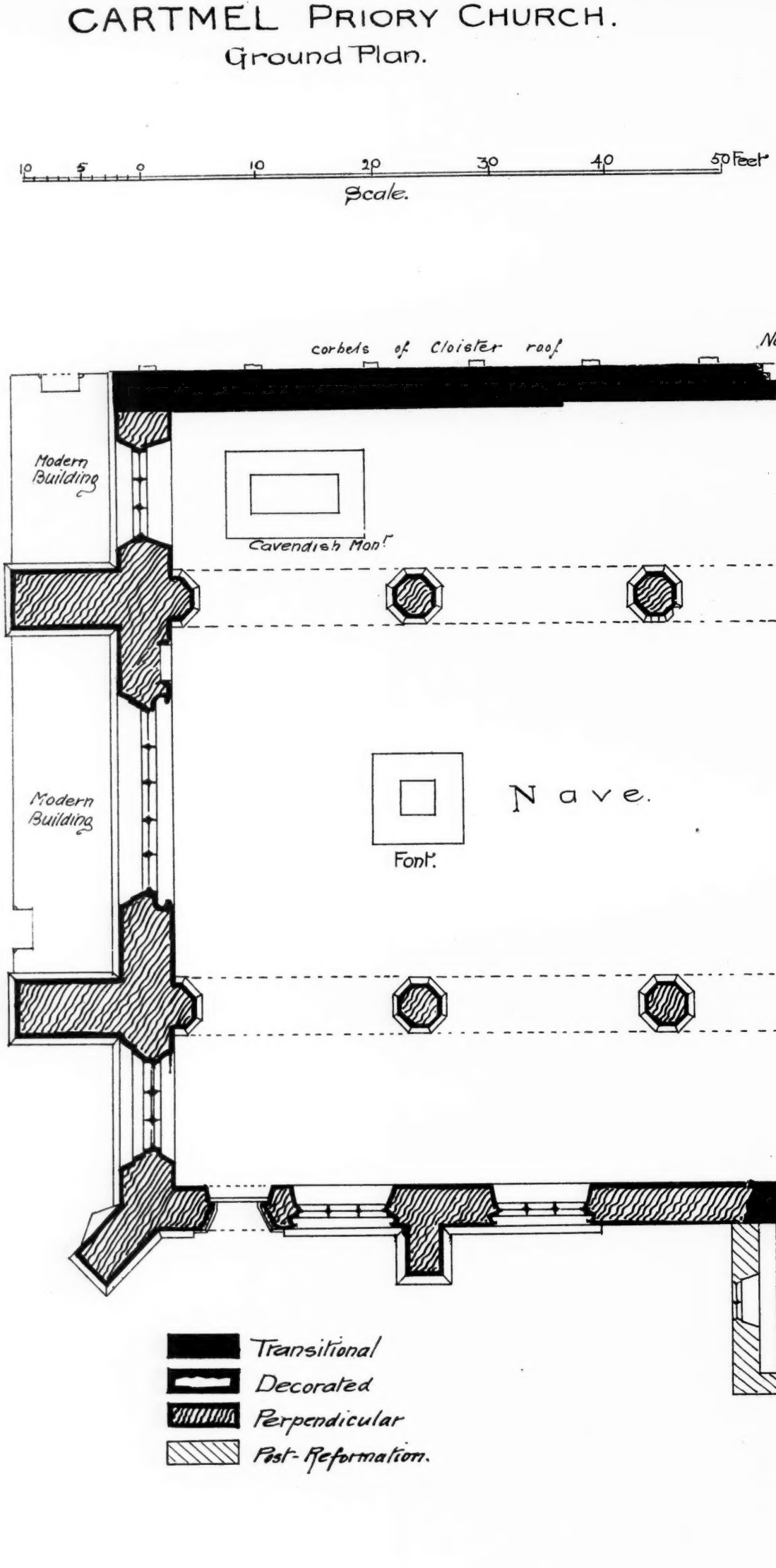

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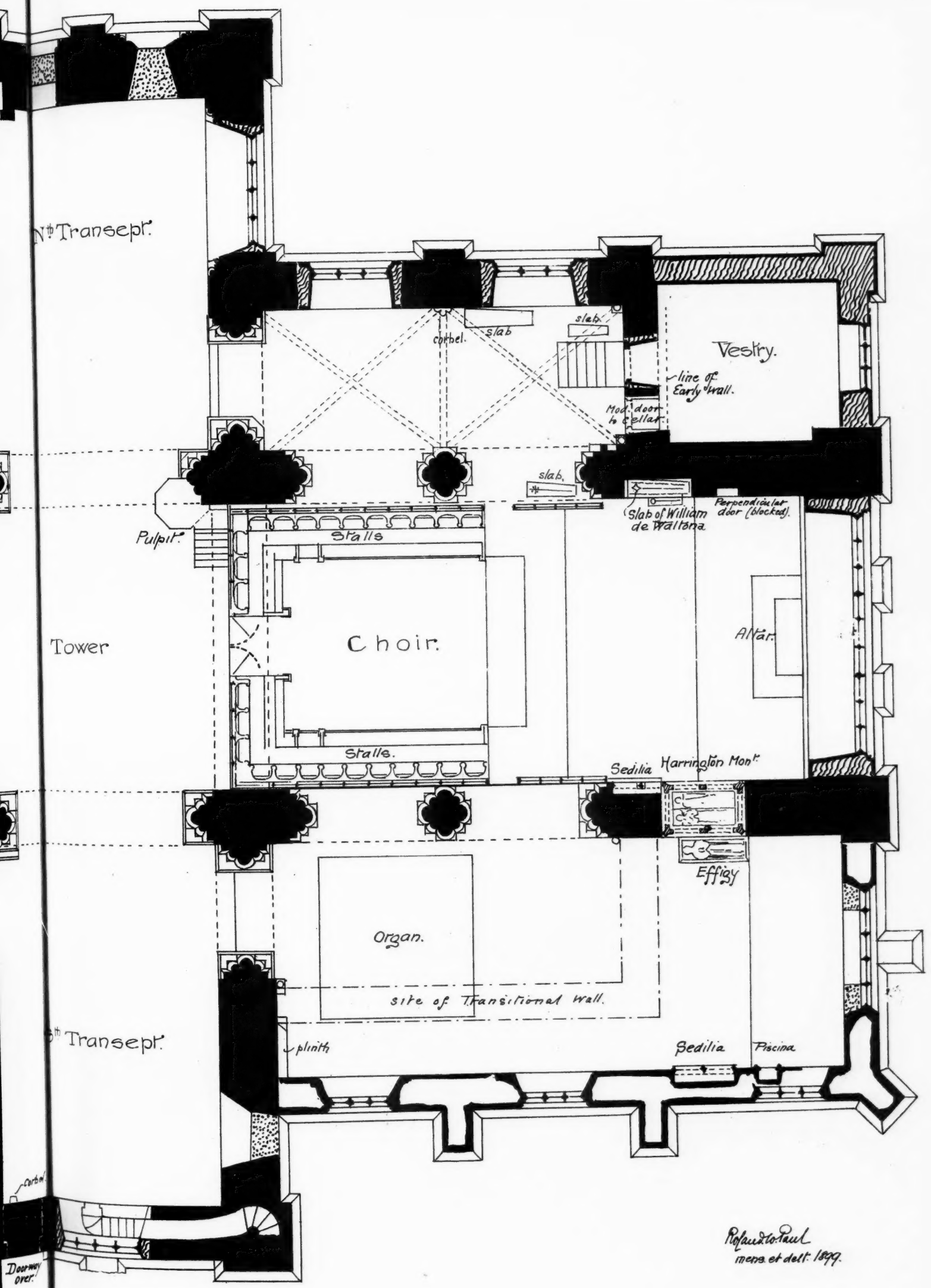

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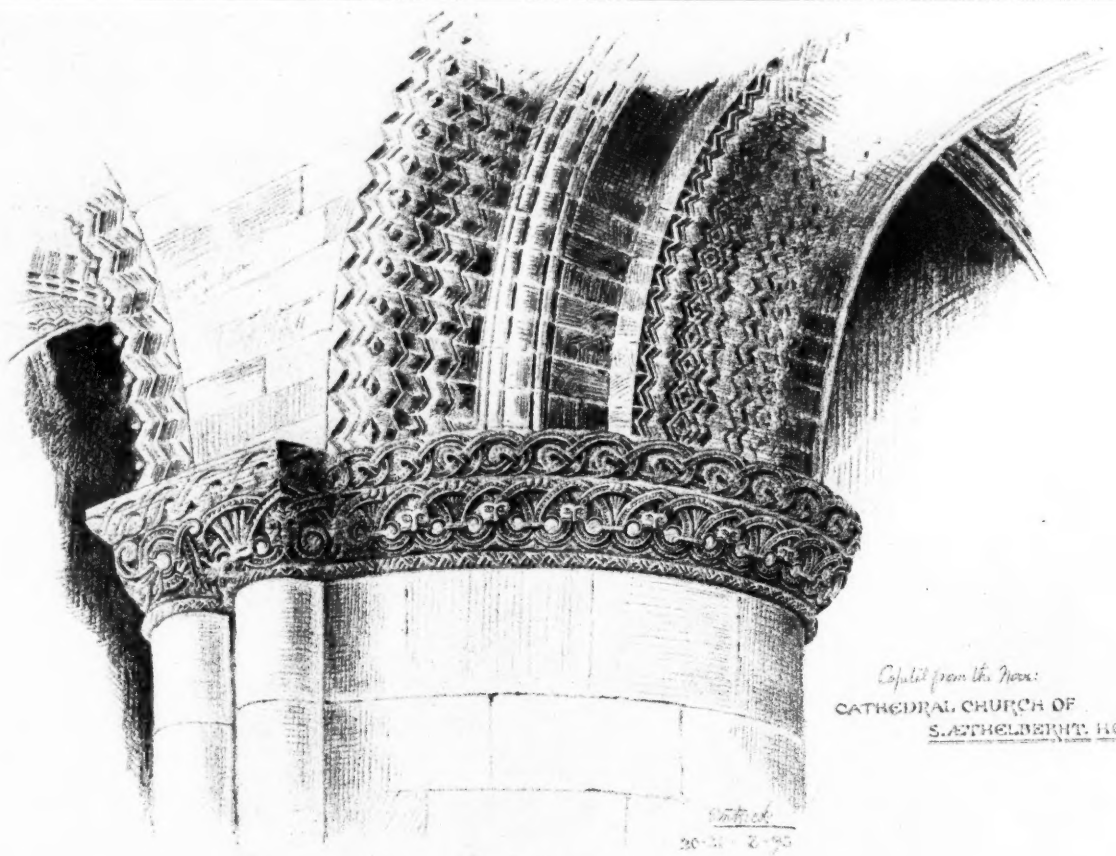

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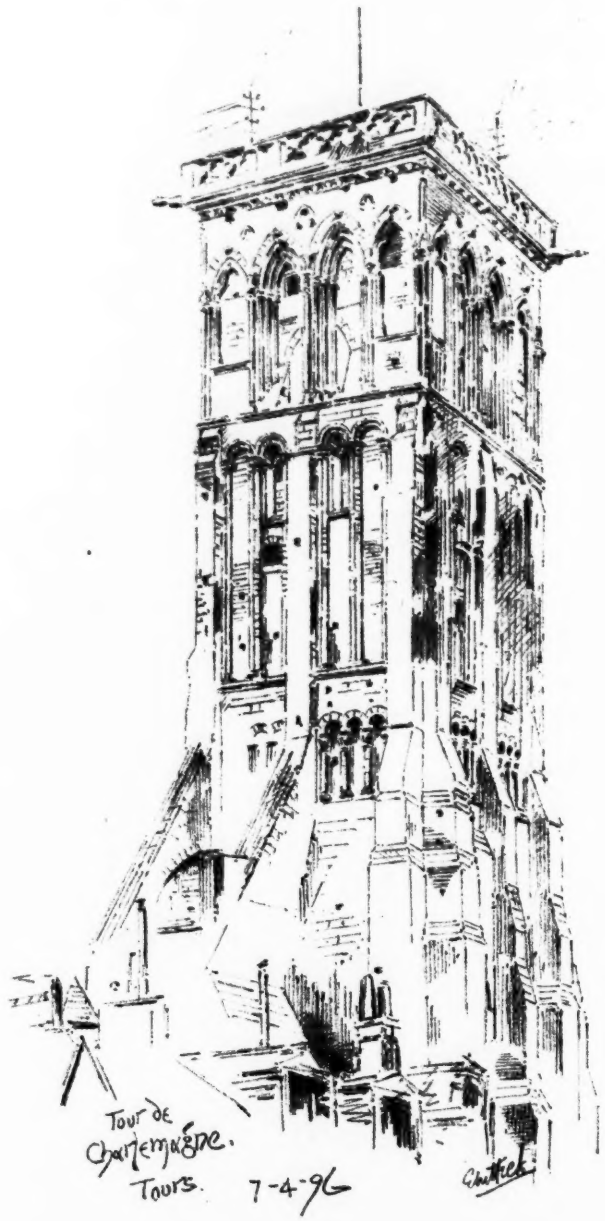

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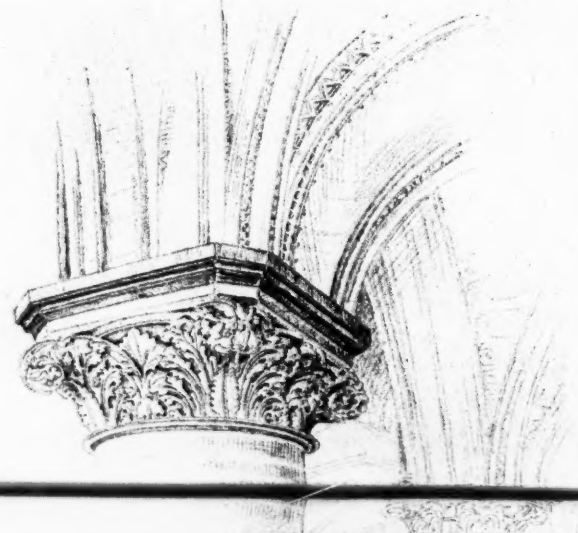

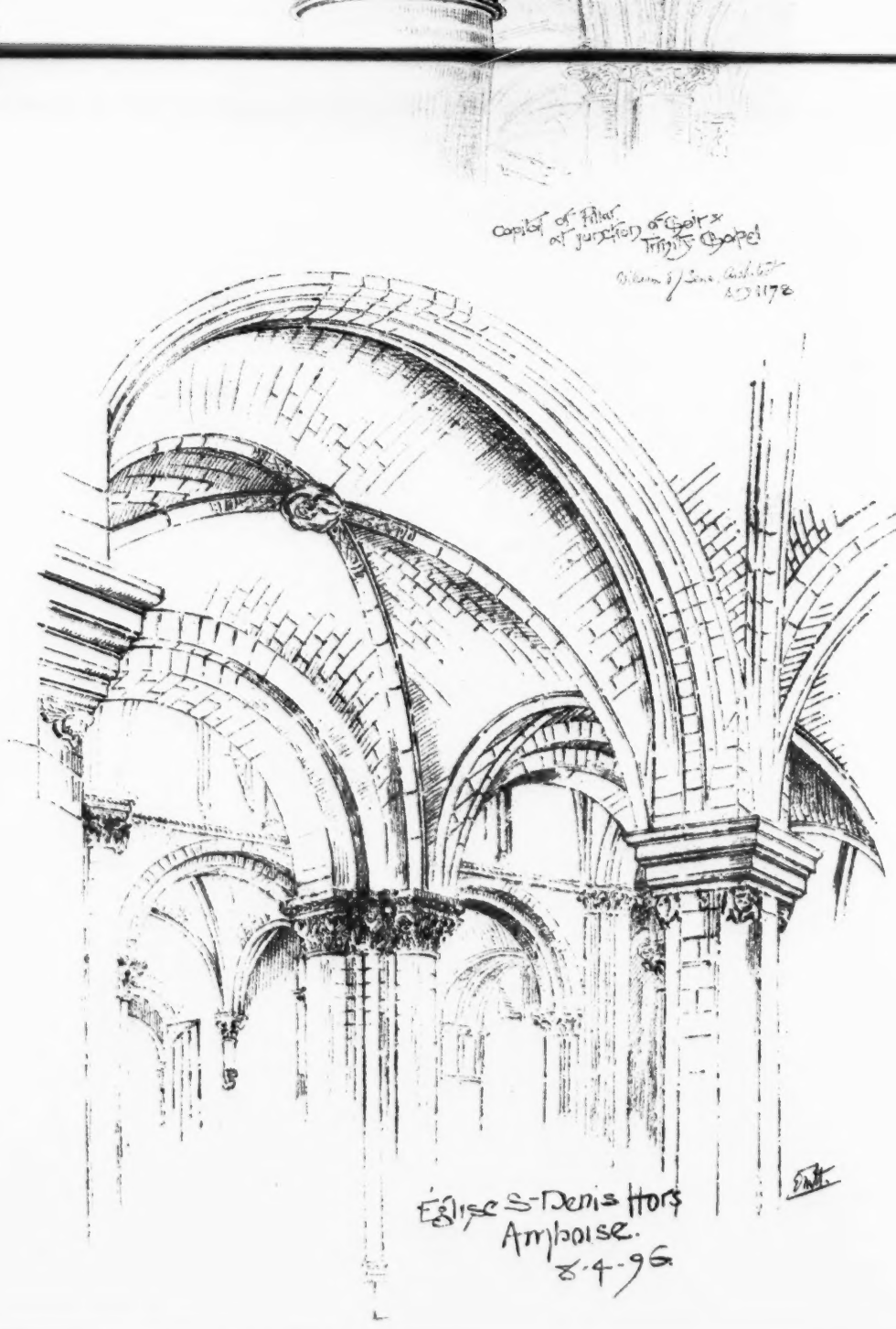

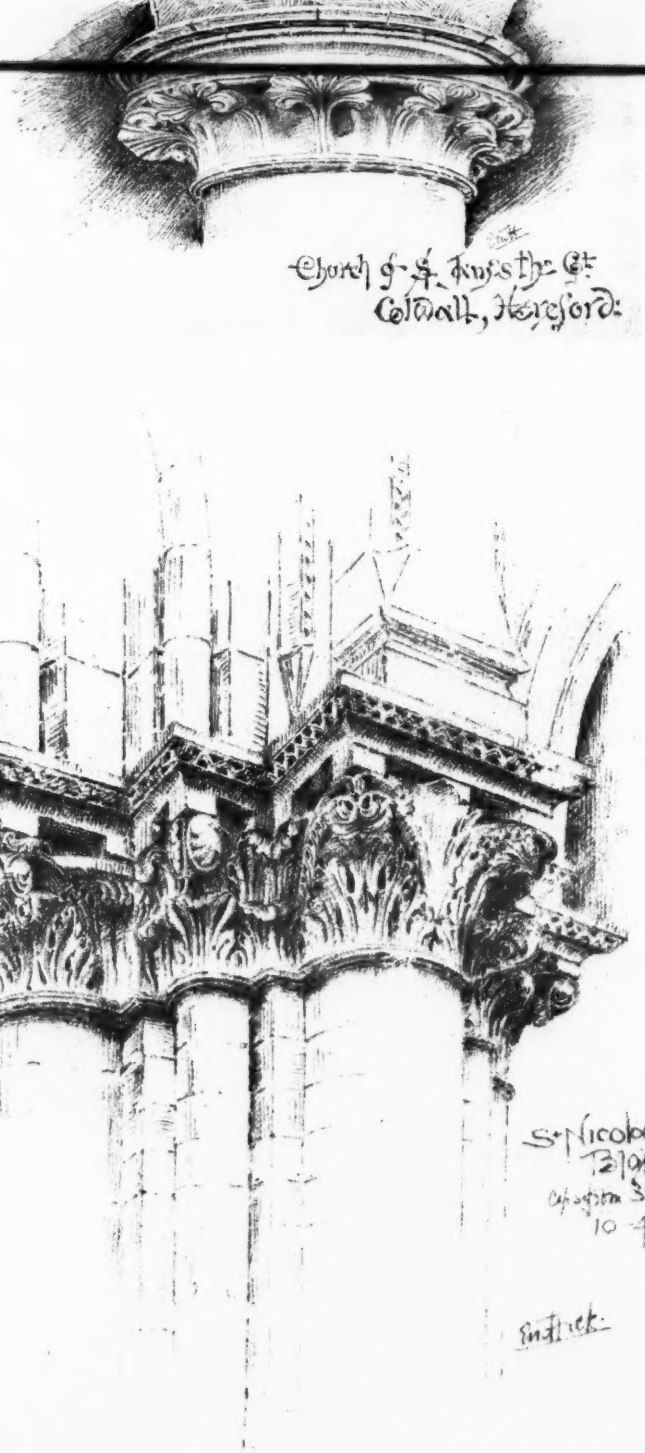

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